



Grand Canyon School Kitchen Expansion Grand Canyon National Park, Coconino County, Arizona

Environmental Assessment and Assessment of Effect

November 2002

Note to Reviewers and Respondents

If you wish to comment on the Environmental Assessment/Assessment of Effect, you may mail comments to the name and address below. Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home address from the record, which we will honor to the extent allowable by law. There also may be circumstances in which we would withhold from the record a respondent's identity, as allowable by law. **If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment.** We will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety.

Please Address Comments to:

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Summary

The Arizona School Facilities Board conducted a statewide assessment of schools in 2000. This assessment identified a lack of adequate space for serving a hot meal program at Grand Canyon school. Grand Canyon school has been providing a hot meal program since 1995. Currently, the cafeteria/kitchen is housed in the Multipurpose building within an area that is approximately 400 square feet. The School Facilities Board determined that this area is not large enough to provide hot meals for the number of students currently enrolled at the school. In addition, they cited a lack of cold storage, which is not available on school grounds, and inconvenient dry storage, which is found in a maintenance building and has to be brought over for each meal. The Grand Canyon School and Arizona School Facilities Boards are proposing to remedy these deficiencies by expanding and remodeling the cafeteria/kitchen in the Multipurpose building.

The General Management Plan states that “Grand Canyon Village will continue to provide community services for the in-park community (including the existing school, day care, grocery store, and clinic). Any needed expansion of these functions will occur outside the park, and any addition of services within the park will be accommodated by first considering the adaptive reuse of historic structures.” This allows for expansion of the Multipurpose building in order to accommodate the hot-lunch program at the school because it is an existing program that is not being expanded but rectified to satisfy state and county requirements and not increase the number of students it serves. In addition, it does not require a new building to be added to the campus, but merely an addition to an existing building, and therefore, is not expanding the footprint of the campus.

This Environmental Assessment/Assessment of Effect (EA/AEF) analyzes the impacts of four alternatives: A) No Action; B) A 1,000 square foot expansion on north-side of the Multipurpose building; C) A 1,000 square foot expansion on south-side of the Multipurpose building, which is the agency preferred/environmentally preferred alternative; and D) A 400 square foot expansion on north-side of the Multipurpose building. Impacts to natural, cultural, and visual quality values are described in this document.

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Introduction

This Environmental Assessment and Assessment of Effect (EA/AEF) provides disclosure of the planning and decision-making process and potential environmental consequences of the alternatives for remodeling/expanding the kitchen in the Multipurpose building at Grand Canyon school to allow a hot meal program to continue for students at the school. It is required because the school is located in Grand Canyon National Park on land managed by the National Park Service (NPS). This document also contains information needed to consult with the State Historic Preservation Office under Section 106 of the National Historic Preservation Act. Appendix A contains the signature page for the cultural resource specialists. The analysis of environmental consequences was prepared on the basis of a need to adequately analyze and understand the consequences of the impacts related to the proposed development and to involve the public and other agencies in the decision-making process. In implementing this proposal, the NPS would comply with all applicable laws and executive orders.

Purpose And Need

The Grand Canyon School and Arizona School Facilities Boards are proposing to expand and remodel the kitchen at Grand Canyon to comply with the Arizona School Facilities Board (SFB) requirements and Coconino County Health Department codes for providing hot meals to students. The area currently used for the kitchen in the Multipurpose building is approximately 400 square feet, and is not large enough to provide hot meals for the number of students currently enrolled at the school. This determination was made when the Arizona SFB conducted an assessment of schools in Arizona and prepared a list of deficiencies for the Grand Canyon school. Grand Canyon school has been providing a hot meal program since 1995.

Management and Planning History

Grand Canyon National Park is currently operating under the direction of the 1995 General Management Plan (GMP). This plan provides guidance for resource management, visitor use, and general development for a period of 10 to 15 years. The GMP designated Grand Canyon Village as a development zone, which prescribed the area to provide and maintain facilities for serving park managers and visitors. The GMP states that “Grand Canyon Village will continue to provide community services for the in-park community (including the existing school, day care, grocery store, and clinic). Any needed expansion of these functions will occur outside the park, and any addition of services within the park will be accommodated by first considering the adaptive reuse of historic structures (NPS 1995a).” This allows for expansion of the Multipurpose building in order to accommodate the hot-lunch program at the school because it is an existing program that is not being expanded but rectified to satisfy state and county requirements. In addition, it does not require a new building to be added to the campus, but merely an addition to an existing building.

Because the school already provides a meal program for students, the kitchen remodel/expansion would not be considered an expansion of the school’s footprint. Instead, it is considered a remodeling effort to meet the requirements of the Arizona SFB, and therefore, would not be in violation of the GMP.

The Arizona SFB conducted a statewide assessment of schools in 2000. This assessment identified a lack of adequate space for serving a hot meal program in the Multipurpose building for the 384 students attending the school. The cafeteria area has no storage and cannot accommodate the equipment needed to prepare breakfast and lunches for the number of students attending the school. The dry storage space for the kitchen is located in a maintenance building and has to be brought over for each meal. The school also has no space for cold storage (SFB 2000).

Since receiving this assessment, the school board has hired a professional architect to design the kitchen expansion. Meetings have been held between staff at the Grand Canyon school, SFB, and the NPS to identify the level of NEPA documentation that would be needed for this project, as well as to review the proposed options for the kitchen expansion and identify initial issues and concerns.

Project Location

Grand Canyon National Park – designated a World Heritage site, is one of the most popular tourist destinations in America. It is located in the southwestern United States on the Colorado Plateau in Coconino County, Arizona (Figure 1). The park is divided by the canyon into the North Rim and South Rim areas. This analysis is focused on the South Rim.



Figure 1. Vicinity map

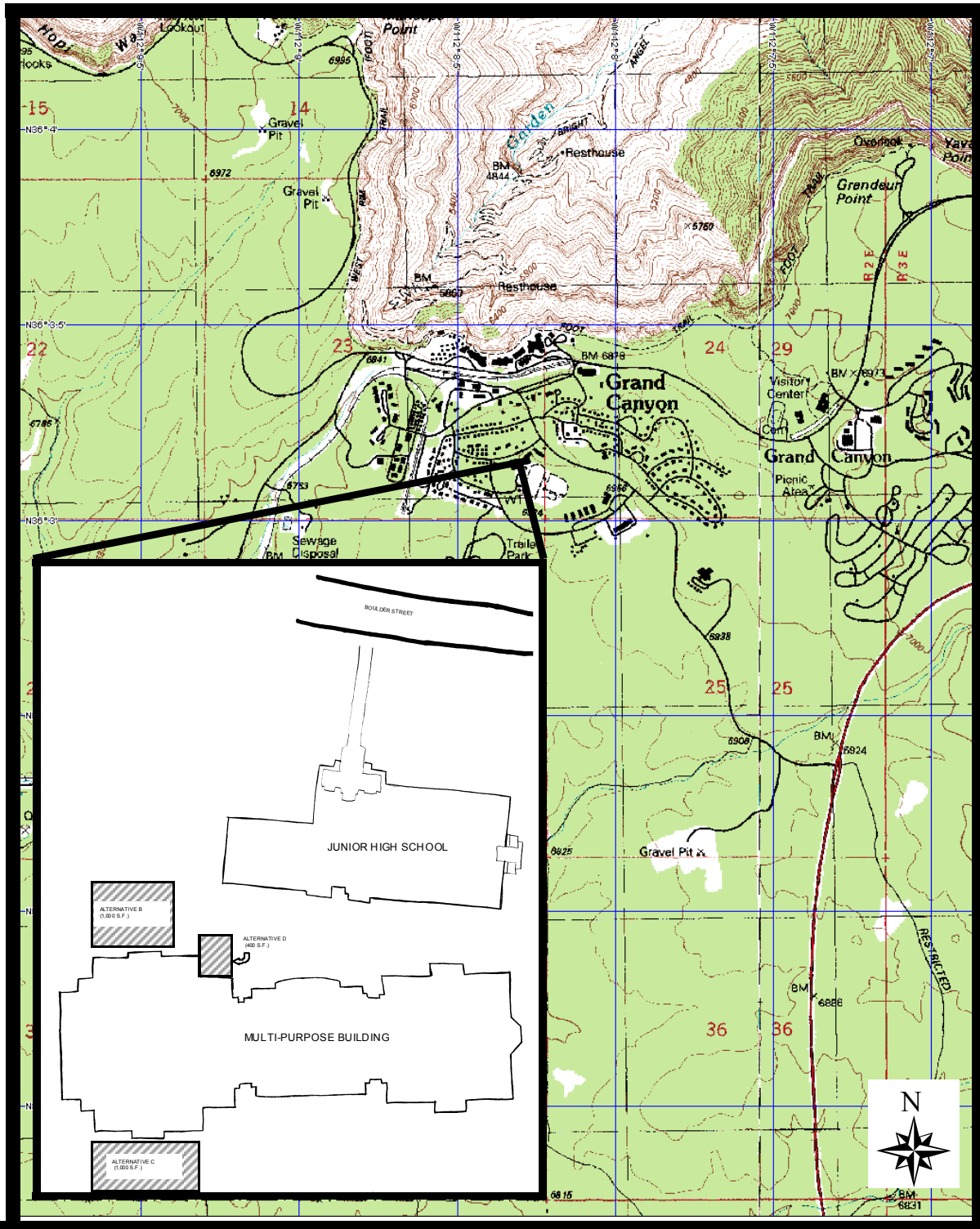


Figure 2. Project Area Map



Scale 1 inch = 24,000 feet

The first school at Grand Canyon was started in 1911 to teach the superintendent's children and other school-aged children in the area. It was located south of Bright Angel Trail, in a building known as "Cameron's Green House." By 1916, another school was built south of the Fred Harvey garage and was used until the historic Junior High school was built in the late 1930's (Lauzon 1992). The school has since remained in this location and several other buildings and additions have been added to the school's campus since 1939, including the Multipurpose building, which was built in 1988.

Issues And Impact Topics Included in this Document

In August 2001, a public scoping letter about this project was sent to 353 individuals including federal and state agencies, special interest groups, American Indian tribes, and interested citizens. The letter described the proposed project and requested comments. Seven letters were received from interested agencies and citizens. A synopsis of public comment is provided in Chapter 5.

Issues were identified using the public comments received during scoping. Once issues were identified, they were used to help formulate the alternatives and mitigation measures. Impact topics were then selected for detailed analysis based on substantive issues; environmental statutes, regulations and executive orders; and NPS Management Policies (2001). Issues and impact topics analyzed in this document include soils; exotic vegetation and noxious weeds; threatened, endangered, and species of concern; historic resources; cultural landscapes; and visual quality. A summary of the impact topics and rationale for selection are described as follows.

Natural Resources

Soils

Ground disturbance would be associated with the proposed activities and would have the potential to impact soil resources; therefore, this topic will be analyzed in this document.

Exotic Vegetation and Noxious Weeds

Proposed ground disturbance could create conditions favorable for the spread of exotic vegetation and noxious weeds. In addition, construction equipment could spread existing populations of exotic vegetation or introduce seeds to proposed construction sites. Therefore, this topic will be analyzed in this document.

Cultural Resources

The NPS is mandated to preserve and protect its cultural resources through the Organic Act of 1916, and through specific legislation such as the Antiquities Act of 1906, NEPA of 1969 (as amended), National Historic Preservation Act of 1966 (as amended), NPS Management Policies, Cultural Resource Management Guideline (Director's Order-28), and the Advisory Council on Historic Preservation's implementing regulations regarding "Protection of Historic Properties" (36 CFR §800). Other relevant policy directives and legislation are detailed in Director's Order-28. The NPS has notified the State Historic Preservation Office (SHPO) that an EA/AEF would be prepared for this project in order to comply with Section 106 NHPA consultation requirements.

Historic Resources

All action alternatives evaluated in this EA are located immediately outside the boundary of the Grand Canyon Village Historic District (a National Historic Landmark property) and within 50 feet of the Junior High School (NR # 227), which is considered a contributor to the National Historic Landmark (NHL). The historic Junior High School building was built in 1939, using

funds from the Public Works Administration. The potential impacts of new construction in proximity to the historic building are analyzed in this document, as well as the potential to compromise the NHL status of the Grand Canyon Village Historic Landmark district.

Cultural Landscapes

A cultural landscape is defined as "a geographical area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with an historic event, activity, or person or exhibiting other cultural or aesthetic values" (Director's Order-28). In the broadest sense, a cultural landscape reflects human adaptation and use of natural resources. This type of landscape is often evident in the division and organization of the land, the presence of both natural and cultural biotic features, the systems of circulation that allow movement, and the types of structures that are built. The character of a cultural landscape is defined by physical material, use and function. Individual features, such as roads, buildings, walls, and vegetation, are material components that, taken together, create the whole landscape. Patterns of use and function reflect cultural values and traditions.

Most of the Grand Canyon Village Historic District's structures date from the 1930s, constructed in the prevailing rustic style that incorporate native building materials, primarily wood and stone. The historic Junior High School also is built with this "rustic" theme that takes advantage of native building materials that harmonize with the environment. However, since its construction, several other buildings have been added to the school's campus, including the Multipurpose building, which have changed the cultural landscape of the historic school site. The newer buildings, however, were designed to remain subordinate to the original school. Potential project-related impacts on the cultural landscape are analyzed in this document.

Visual Quality

Vulnerability to visual impacts is a function of a site's visibility, the size of the development, and the site's capacity to absorb change. The proposed project may alter the visual condition of the school campus; therefore, it will be analyzed in this document.

Impact Topics Eliminated from Further Consideration

Several issues are not analyzed in this document because they are outside the scope of this analysis or the proposed action would not impact the resource. The reasons for eliminating the analysis of these issues are discussed below.

Geology and Topography

Alteration of geologic processes and features are not proposed in any of the alternatives. No major earthmoving or blasting activities are proposed that would impact the geologic processes or features or cause substantial alteration of the topography. Therefore, this topic will not be further addressed in this document.

Threatened, Endangered and Species of Concern

Section 7 of the Endangered Species Act of 1973, as amended, requires all federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitats. The NPS requested a species list from the USFWS for this project. They responded that the proposed undertaking would have "no effect" on any listed, proposed, or candidate species of concern (pers. com. between Bill Austin, USFWS and Jill Beshears NPS). In

addition to the information provided through correspondence from the USFWS, the NPS reviewed Grand Canyon National Park files, consulted resource specialists, requested information on species occurrence records from Arizona Game and Fish Department, and reviewed the Arizona Game and Fish Department's Heritage Data Management System (2000) for information on special status species in the vicinity of the project. The Arizona Game and Fish Department responded with two species of concern for the proposed project: the long-legged myotis (*Myotis volans*) and the Grand Canyon catchfly (*Silene rectiramea*). Habitat for either of these species would not be affected by any of the alternatives considered in this analysis. Therefore, this topic will not be further addressed in this document.

Aquatic Habitat

Aquatic habitat is absent from the project area due to the lack of surface water. There would be no affect from the proposed project on aquatic communities. Therefore, this topic will not be further addressed in this document.

Wildlife

Many resident and migratory species of wildlife inhabit the park, including 90 species of mammals, 290 species of birds, 60 species of reptiles and amphibians, and 25 species of fish (NPS 1995a). Common mammals include mule deer, elk, coyote, gray fox, black-tailed jackrabbit, bobcat, striped skunk, ringtail, golden-mantled ground squirrel and several other rodent and bat species. Common resident bird species include the common raven, Steller's and pinyon jay, three nuthatch species, western bluebird, red-tailed hawk, several wren and sparrow species, northern flicker, and dark-eyed junco (NPS 1995a).

Although several species of wildlife, particularly those associated with ponderosa-pinyon-gambel oak-juniper habitat, may reside in or near the project area, the actions evaluated in this EA would be undertaken in developed areas that support moderate to high levels of human use. Wildlife in the project area would be habituated to high levels of disturbance and human activity and would be affected negligibly, if at all, by the actions proposed in this EA. Therefore, this topic will not be further addressed in this document.

Environmental Justice

In general, the term "environmental justice" refers to fair treatment of all races, cultures, and income levels with respect to laws, policies, and government actions. In February 1994, Executive Order 12898, titled Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, was released to federal agencies. This order requires each federal agency to incorporate environmental justice as part of its mission. Federal agencies are specifically ordered to identify and address disproportionately high and adverse effects of its programs, policies, and activities on minority and low-income populations. In a related memorandum to heads of all federal departments and agencies, released concurrently with Executive Order 12998, the President underscores provisions of existing laws that are intended to help ensure the environmental quality of communities throughout the nation. This memorandum further states that mitigation measures identified in environmental documents should address significant and adverse environmental effects on minority communities and low-income communities.

None of the alternatives would have disproportionate health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's Draft Environmental Justice Guidance (July 1996), as well as Executive Order 12898. Therefore, this topic will not be further addressed in this document.

Ethnographic Resources

The lands of Grand Canyon National Park are traditionally affiliated with several tribes of the southwest – the Havasupai, Hopi, Hualapai, Kaibab Band of Paiute, Navajo Nation, Paiute Indian Tribes of Utah, White Mountain Apache, San Juan Southern Paiute, and Zuni Tribes. Letters were sent to the tribes during the public scoping process. The Hopi, Zuni, and Navajo Tribes responded back in writing that they have no concerns regarding the project. No ethnographic resources (e.g., funerary objects, sacred objects, objects of cultural patrimony, plant gathering areas, or ceremonial sites) are known to occur in either the project area or its general vicinity. Therefore, this topic will not be further addressed in this document.

Archaeological Resources

NPS staff reviewed site records at Grand Canyon and determined that several archaeological clearance surveys have been completed within the area of potential effect for this analysis, including a survey completed in 1973 by Peter Pilles, et.al. for Grand Canyon Village (Pilles 1973). No archaeological resources are known to occur within the area of potential effect and all proposed alternatives are within areas that have been previously disturbed. Subsurface work would be minimal for this project. Therefore, this topic will not be further addressed in this document.

Prime and Unique Farm Land

All federal agencies are required to analyze the effects of their actions on soils classified as prime or unique by the Natural Resource Conservation Service (NRCS), as required by the Council of Environmental Quality in a memorandum of August 1980. The Farmland Protection Policy Act of 1981, as amended, also requires federal agencies to consider adverse effects to prime and unique farmlands that would result in conversion of prime and unique farmland to non-agricultural uses. Prime farmland is defined as soil that particularly produces general crops as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables and nuts. The soils in the project area are shallow and poorly developed. Additionally, all land that would be affected by this project is already used for school purposes and would require no conversion of land use. According to the NRCS, there are no prime or unique farmlands associated with the project area (Email to Cole Crocker-Bedford, GCNP, from Phil Camp, NRCS, November 2002). Therefore, this topic will not be further addressed in this document.

Air Quality

Project construction would result in an increase in fugitive dust from soil exposure and disturbance. However, this effect would only occur during the construction period and would be localized and negligible, if at all. Water or dust control agents would be applied during construction, if necessary, to control dust.

The proposed activities would increase vehicle emissions from operating construction vehicles and hauling materials. However, the increased emissions be localized and would have an immeasurable effect on regional or local pollutant levels. Therefore, this topic will not be further addressed in this document.

Water Quality/Quantity

The NPS seeks to restore, maintain, and enhance the quality of all surface and ground waters in the park, consistent with the Federal Water Pollution Control Act, as amended, and other applicable federal, state, and local laws and regulations. The quality of ground and surface water

would not be measurably affected by the proposed kitchen expansion at Grand Canyon school. By implementing best management practices, increased sedimentation from increased surface runoff and soil erosion would be minimal, and the potential to pollute local water sources would be unlikely. The proposed kitchen expansion is not expected to need additional domestic water supply beyond what the school currently uses. Therefore, this topic will not be further addressed in this document.

Floodplains

Executive Order 11988 (“Floodplain Management”) requires an examination of impacts to floodplains. The 2001 NPS Management Guidelines, Director’s Order-12, and the 1995 GMP provide guidelines on developments proposed in floodplains. Executive Order 11988 requires all federal agencies to avoid construction within the 100-year floodplain unless no other practical alternative exists. Certain construction within a 100-year floodplain requires that a Statement of Findings be prepared and accompany a Finding of No Significant Impact. The Multipurpose building on the Grand Canyon School campus is not within the 100-year floodplain; therefore, none of the alternatives would be constructed within the 100-year floodplain. Consequently, no Statement of Findings for floodplains will be prepared. Therefore, this topic will not be further addressed in this document.

Wetlands

Executive Order 11990, Protection of Wetlands, requires federal agencies to avoid, where possible, impacts on wetlands. Proposed actions that have the potential to adversely impact wetlands must be addressed in a Statement of Findings. Soils, hydrology, and vegetation typical of a wetland environment classify jurisdictional wetlands. No jurisdictional wetlands exist at or near the project area. Therefore, this topic was eliminated as an impact topic in this document.

Reducing Student Population

The issue of reducing the number of students that attend Grand Canyon school was brought up during public scoping. In order to reduce the student population, children would need to be bused to another school district or the number of NPS staff with school-aged children would need to be reduced. The NPS does not anticipate a reduction in the population of mandatory and critical staff required to maintain operations and public safety for the employees and park visitors at the South Rim. Busing students to another district is not an option under consideration. Both of these suggestions are outside the scope of this analysis. Therefore, this topic was eliminated as an impact topic.

Soundscape

The NPS is mandated by Director’s Order-47 (Sound Preservation and Noise Management) to articulate their operational policies that will require, to the fullest extent practicable, the protection, maintenance, or restoration of the natural soundscape resource in a condition unimpaired by inappropriate or excessive noise sources. Natural sounds are intrinsic elements of the environment that are often associated with parks and park purposes. They are inherent components of “the scenery and the natural and historic objects and the wildlife” protected by the Organic Act. Natural sounds may provide valuable indicators of the health of various ecosystems. Intrusive sounds are of concern because they sometimes impede the ability of the NPS to accomplish their mission.

Noise impacts from this project would only last during construction. After construction is completed, noise level impacts would be negligible and would essentially return to their pre-

construction condition. All construction would occur during daylight hours, when roads and the associated traffic already impact the area. Therefore, this topic will not be further addressed in this document.

Park Operations

The proposed kitchen expansion would be operated and managed by Grand Canyon School. Park operations will not be affected by the alternatives. Therefore, this topic will not be further addressed in this document.

Socioeconomic Values

The local economy and most businesses of the communities surrounding the park are based on construction, recreation, transportation, tourist sales, services, and educational research; the regional economy is strongly influenced by tourist activity. There may be short-term, negligible benefits to the local and regional economy resulting from construction-related expenditures and employment. Local and regional businesses would not be appreciably affected in the long-term. Therefore, this topic was eliminated as an impact topic.

Visitor Use and Experience

The NPS is directed to provide an enjoyable visitor experience through the 1916 NPS Organic Act and the 2001 NPS Management Policies. The Multipurpose building that would be expanded under this project is under the administration of the Grand Canyon School and not considered a visitor facility that is managed by the NPS. Visitor use and experience of the park would not be affected by the project. Therefore, this topic will not be further addressed in this document.

Introduction

This section describes three alternatives for this project, in addition to the NEPA required “no action” alternative.

Alternative A – No Action

Under the No Action Alternative, the kitchen expansion would not be built at Grand Canyon school. The existing condition at the school would remain unchanged. This alternative provides the baseline for comparison of the action alternatives. The existing situation of providing hot meals to students would continue until the Arizona SFB and/or Coconino County demand it be stopped.

Alternative B – Expansion on North-side of Multipurpose Building Proposed Action

This alternative is the proposal that was brought forward by the Grand Canyon School Board and Arizona SFB to the National Park Service for consideration, and therefore, was the proposal that initiated the NEPA process. As such, it is the “proposed action” alternative in the context of the regulations for implementing NEPA.

This alternative proposes to construct a new kitchen within the existing Multipurpose building at Grand Canyon school. The new kitchen would be located on the north side of the building, with dimensions approximating 20 feet by 50 feet (Figure 3). A total of about 1,000 square feet would be needed for the kitchen under this alternative. This would allow the area that is currently used for the kitchen to be converted to food storage.

School grounds that would be affected by this action involve a cement sidewalk, previously disturbed grounds, and three pinyon pine trees. The trees that would be removed have a diameter at breast height of 14 inches, 7 inches, and 8 inches. A fourth tree has already been removed by the NPS because it was dead. The new addition would conform to all NPS requirements for aesthetics and architectural design standards. The outside area that is disturbed during construction would be reclaimed and revegetated to resemble pre-construction conditions, and sidewalks would be rerouted around the new addition.

Utilities would tie into existing lines and vaults. Approximately 135 linear feet of trench would be needed to bury all of the utilities. The distance from the tie in to the proposed expansion for each utility is listed in Table 2. No existing utilities would need to be relocated under this alternative.

Construction under this alternative is proposed for the summer of 2003.

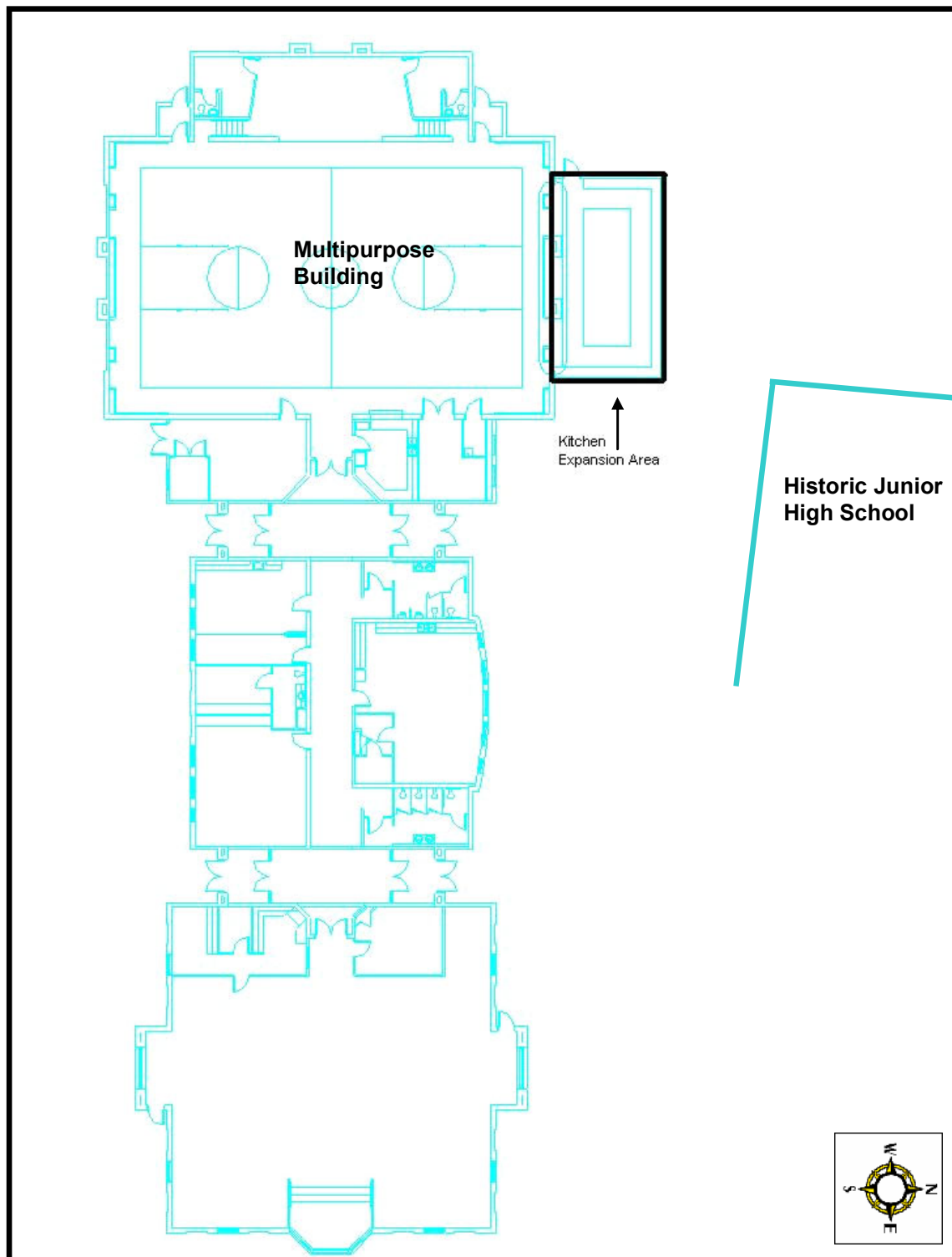


Figure 3. Floor Plan for Alternative B.

Table 2. Length of Utilities Associated with Alternative B.

Utility	Distance to Kitchen Area (feet)	Utility Source Location
Electric	48	Electrical box behind school
Water	8	Vault in sidewalk
Sewer	30	Tie in near entrance to school
Gas	48	Tie in between school and Multipurpose building

Alternative C – Expansion on South-side of Multipurpose Building Preferred Alternative

This alternative was developed in response to historic resource and cultural landscape impacts. This alternative is the preferred alternative identified by the NPS.

This alternative is similar to Alternative B; however, the proposed expansion would occur on the south side of the Multipurpose building (Figure 4). A total of about 1,000 square feet would be needed for the kitchen under this alternative, with dimensions approximating 20 feet by 50 feet. This would allow the area that is currently used for the kitchen to be converted to food storage. The new addition would conform to all NPS requirements for aesthetics and architectural design standards.

The area involved in this alternative has already been disturbed, but two ponderosa pine trees would need to be removed. The trees that would be removed have a diameter at breast height of approximately 24 inches. A manmade drainage that diverts water away from the building would be impacted under this alternative and would need to be relocated.

Utilities would tie into existing lines and vaults. Approximately 288 linear feet of trench would be needed to bury all of the utilities. The distance from the tie in to the proposed expansion for each utility is listed in Table 3.

Table 3. Length of Utilities Associated with Alternative C.

Utility	Distance to Kitchen Area (feet)	Utility Source Location
Electric	8	Electrical box behind Multipurpose building
Water	160	Vault in sidewalk on north side of Multipurpose building
Sewer	120	Clean out area for Multipurpose building on northwest side of building
Gas	0	Runs under expansion, would need to be rerouted around expansion

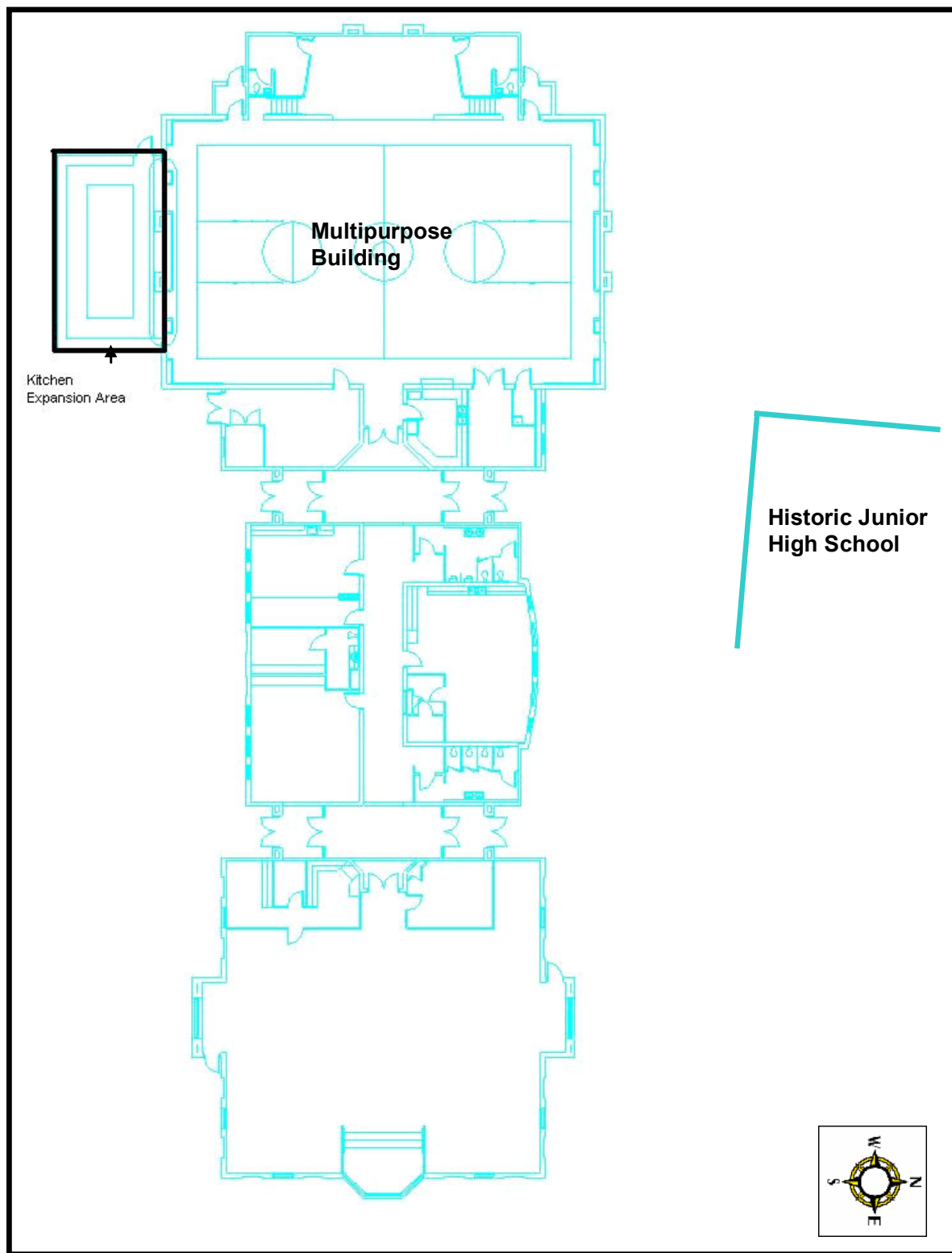


Figure 4. Floor Plan for Alternative C.

Existing utilities that would need to be relocated under this alternative include the gasline that currently runs under the proposed area that would be used for the expansion and the fire and communications vault, which is on the south west corner of the proposed site.

Construction under this alternative is proposed for the spring of 2003.

Alternative D – Small Expansion on North-side of Multipurpose Building

This alternative would occur on the north side of the Multipurpose building, but would only involve 400 square feet of additional space (Figure 5). The dimensions of the expansion would approximate 17 feet by 25 feet. Under this alternative, the existing space in the Multipurpose building that is used for the hot meal program would be incorporated into the design of the new kitchen, instead of used for food storage. The outside area involved in this alternative has already been disturbed and is primarily devoid of vegetation. This alternative would be the closest to the historic Junior High School building (approximately 20 feet). The new addition would conform to all NPS requirements for aesthetics and architectural design standards.

Utilities would tie into existing lines and vaults. Approximately 240 linear feet of trench would be needed to bury all of the utilities. The distance from the tie in to the proposed expansion for each utility is listed in Table 4.

Table 4. Length of Utilities Associated with Alternative D.

Utility	Distance to Kitchen Area (feet)	Utility Source Location
Electric	95	Electrical box behind school
Water	10	Vault in sidewalk
Sewer	40	Tie in near entrance to school
Gas	95	Tie in between school and Multipurpose building

Existing utilities that would need to be relocated under this alternative include the pipestems for the underground sprinkler system, the building alarm system, and telephone and electrical boxes.

Construction under this alternative is proposed for the spring of 2003.

Mitigation Measures for the Action Alternatives

Mitigation measures are analyzed as part of the action alternative (Alternatives B, C, and D). These measures have been developed to lessen the potential adverse effects of expanding the Multipurpose building.

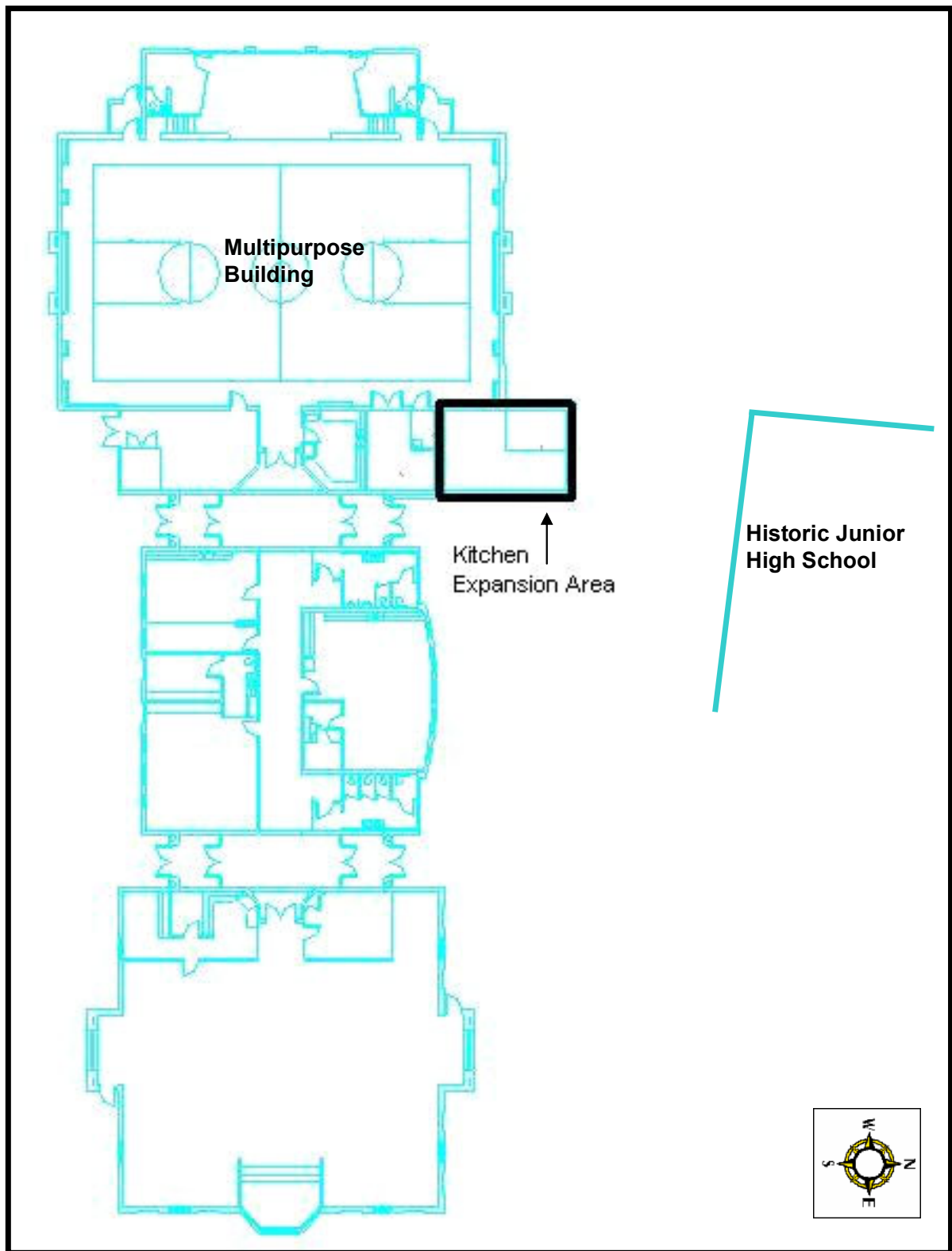


Figure 5. Floor Plan for Alternative D.

Natural Resources

Soils

- Construction zones will be fenced with construction tape, snow fencing, or some similar material before any construction activity begins. The fencing would define the construction zone and confine activity to the minimum area required for construction. All protection measures will be clearly stated in the construction specifications and workers will be instructed to avoid conducting activities beyond the construction zone as defined by the construction zone fencing.

Biotic Communities

Vegetation

- Any pruning or trimming of vegetation will be completed under the guidelines and approval of the Revegetation Office of the park.
- All trenching activities will be completed under the guidelines and approval of the Revegetation Office of the park, and will not impact tree roots.

To prevent and minimize the spread of exotic vegetation and noxious weeds, the following mitigation measures would be implemented:

- Existing populations of exotic vegetation at the construction site will be treated prior to construction activities.
- All construction equipment that leaves the paved road will be pressure washed prior to entering the park.
- Any fill material will be obtained from a park-approved source.
- All areas disturbed by construction will be revegetated using site-adapted native seed and plants.
- Native plants will be salvaged from the project site and used to revegetate the site after construction activities have been completed. Plants will also be propagated according to NPS policy, from seed collected on adjoining areas to protect local genotypes.
- Post project exotic plant monitoring will be conducted in the project area as time and funding allows.

Wildlife

- All construction equipment and materials that are brought on site will be inspected for exotic pests. Any exotic pests that are found will be removed prior to equipment or materials entering the park.
- Construction workers and supervisors will be advised to keep their work site clean of debris, especially food wrappers and waste that may attract wildlife. Workers and supervisors will also be instructed to not feed the wildlife.

Threatened and Endangered / Special Status Species

- Construction workers and supervisors will be informed about special status species that are known to occur in the project area. If previously unknown special status species are discovered during construction, all work in the immediate vicinity of the discovery will be halted until Park staff re-evaluates the project and the work modified to allow for any protection measures determined necessary to protect the special status species.
- If a California condor occurs at the construction site, construction will cease until it leaves on its own or until techniques are employed by permitted Park staff or Peregrine Fund personnel that results in the individual condor(s) leaving the area.
- Construction workers will be informed to refrain from interacting with condors and to immediately contact the appropriate Park or Peregrine Fund personnel when condor(s) are seen at the construction site.
- The construction site will be cleaned up at the end of each work day (i.e. trash disposed of, scrap material picked up) to minimize the likelihood of condors visiting the construction site.
- To prevent water contamination and potential poisoning of California condors or other wildlife, a vehicle fuel leakage and spill plan will be developed and implemented. The plan will include immediate clean up of any hazardous substance. The plan will define how each hazardous substance will be treated in case of leakage or spill.

Air Quality

To minimize air pollution, the following mitigation measures would be enacted:

- Heavy construction equipment will not idle for more than five minutes.
- Construction areas will be sprinkled with reclaimed water to reduce fugitive dust.

Noise

- A curfew will be imposed that limits construction activities in the summer (May 1 – September 30) to the hours between 8:00 am and 6:00 pm, and in the winter (October 1 – April 30) to the hours between 9:00 am and 5:00 pm.

Cultural Resources

- Design of the project would be compatible with existing buildings to minimize effects to the historic Junior High school and cultural landscape/NHL district.

To minimize impacts to cultural resources, the following mitigation measures will be implemented:

- If previously unknown archeological resources are discovered during construction, all work within a 100-foot radius of the discovery will be halted until the resources are identified and documented by a qualified archaeologist from the NPS, and an appropriate mitigation strategy developed, if necessary, in accordance with the stipulations of the *1995 Programmatic Agreement Among the National Park Service, the Arizona State Historic Preservation Office, and the Advisory Council on Historic Preservation*

Regarding the General Management Plan/Environmental Impact Statement, Grand Canyon National Park, Arizona.

- All workers will be informed of the penalties for illegally collecting artifacts or intentionally damaging any archeological or historic property. Workers will also be informed of the correct procedures if previously unknown resources are uncovered during construction activities.
- Should unknown buried deposits be located, data recovery excavations will be undertaken. These subsurface survey and data recovery efforts would be guided by a project-specific research design. Additionally, the NPS would begin consultations under the Native American Graves Protection and Repatriation Act in the event that buried human remains are discovered during archeological excavations or project development.

Visual Quality

- Under Alternative B only, any trees that are removed or significantly pruned to allow the construction of the kitchen on the north side of the Multipurpose building will be replaced with a tree of similar size and type. The tree(s) will be planted in the open area between the historic Junior High School and the new addition in an area that will not interfere with the eventual growth of the tree, the intended uses of the building, or the historic integrity of the Junior High School building.

Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act (NEPA) of 1969, which is guided by the CEQ. The CEQ provides direction that "[t]he environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101:

- fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- assure for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
- enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Alternative C is the environmentally preferable alternative. Alternative C would be located on the south side of the Multipurpose building, and therefore, not visible from the historic junior high school. Alternative C would also be located in a highly developed area and would utilize the existing building's architecture for its design. Alternatives B and D, on the other hand, would be located on the north side of the Multipurpose building and would negatively affect the cultural

landscape of the historic Junior High school. Although, Alternative D has the smallest footprint, it would require substantial changes to existing infrastructure, which increases the amount of disturbance and would also be the closest to the historic Junior High school.

Comparison of Alternatives

Table 5 is a matrix comparison of the alternatives that summarizes the proposed activities, which are described in detail under each alternative.

Table 5. Comparison of Alternatives

Proposed Activity	Alternative A	Alternative B	Alternative C	Alternative D
Area of new addition	None	1,000 sq. ft.	1,000 sq. ft.	400 sq. ft.
Intended Re-use of Existing Kitchen Space	Kitchen/ Gymnasium/ Utility Room	Food Storage/ Utility Room	Food Storage/ Utility Room	Kitchen/ Gymnasium/ Utility Room
Location of new addition	None	North side of Multipurpose building	South side of Multipurpose building	North side of Multipurpose building
Distance from Historic Junior High School Building	0	Within 30 feet	Within 100 feet	Within 20 feet
Utilities	0	Total 134 linear ft. • Elec. 48 feet • Water 8 feet • Sewer 30 feet • Gas 48 feet	Total 288 linear ft. • Elec. 8 feet • Water 160 feet • Sewer 120 feet • Gas 0 feet	Total 240 linear ft. • Elec. 95 feet • Water 10 feet • Sewer 40 feet • Gas 95 feet
Meets Project Objectives	No • SFB deficiencies not corrected • Hot meal program could be discontinued	Yes • SFB deficiencies corrected • Hot meal program would continue	Yes • SFB deficiencies corrected • Hot meal program would continue	Yes • Most SFB deficiencies corrected (no food storage on site) • Hot meal program would continue

Summary Of Environmental Impacts

Table 6 is a matrix of environmental consequences to the impact topics identified in Chapter 1 as a result of implementing the alternatives, which are described in detail in Chapter 4, Environmental Consequences.

Table 6. Summary of Environmental Consequences

Impact Topic	Alternative A	Alternative B	Alternative C	Alternative D
Soils	No impact	Long-term negligible impact, primarily from soil displacement from 0.02 acres of ground disturbance, and up to 135 linear feet of trench for utilities	Long-term moderate impact, primarily from soil displacement from 0.02 acres of ground disturbance, and up to 288 linear feet of trench for utilities. Relocating this drainage would require removing approximately 4.45 cubic yards of soil.	Long-term negligible impact, primarily from soil displacement from 0.01 acres of ground disturbance, and up to 240 linear feet of trench for utilities and another 100 linear feet for infrastructure/utility relocation.
Exotic Vegetation and Noxious Weeds	No impact	Short-term negligible risk of introducing noxious weeds onto 0.05 acres of ground disturbed for construction. Up to 4 pinyon pines removed for expansion, but replaced after construction. Mitigation measures implemented to reduce this risk	Short-term minor impact to vegetation from increased risk of introducing noxious weeds onto 0.1 acres of ground disturbed for construction, plus removal of two ponderosa pines. Mitigation measures implemented to reduce spread of noxious weeds	Short-term minor risk of introducing noxious weeds onto 0.09 acres of ground disturbed for construction. Mitigation measures implemented to reduce this risk
Threatened, Endangered, and Species of Concern	No impact	Closest MSO is ~0.5 miles from project Closest peregrine falcon is ~0.5 from project area Condors are known to use the area Closest northern goshawk is >1.25 miles from project area. For all but the condor, no effect on the species or habitat. For condor, project may affect but is not likely to adversely affect.	Same as Alternative B.	Same as Alternative B.
Historic Resources	No impact	Long-term moderate impact. Expansion proposed ~ 30 feet from historic Junior High School, which is a contributor to the Grand Canyon Village Historic District.	Long-term negligible impact on historic resources. This alternative is situated on the south side of the Multipurpose building; therefore, it would have the least amount of impact on the historic Junior High School building	Long-term moderate impact. Expansion is closest to the historic Junior High School building. (~ 20 feet), which is a contributor to the Grand Canyon Village Historic District.
Cultural Landscapes	No impact	Potential to visually intrude on the integrity of the district's historic setting. Moderate long-term adverse impacts on the cultural landscape of the district would be expected.	Potential to visually intrude on the integrity of the district's historic setting. With mitigation measures implemented, negligible long-term adverse impacts on the cultural landscape of the district would be expected.	Potential to visually intrude on the integrity of the district's historic setting. Moderate long-term adverse impacts on the cultural landscape of the district would be expected.
Visual Quality	No impact	Long-term moderate impacts Built on the north-side of the Multipurpose building. Removal of trees would increase visual impact as viewed from Boulder and Center streets, the historic Junior High School, and various viewpoints along the South Rim.	This alternative would only be visible from the school campus, itself. Situated on the back-side of the Multipurpose building, it would not be visible from Boulder or Center Streets or various viewpoints along the South Rim. Negligible long-term impacts to visual quality.	Long-term minor impacts Built on the north-side of the Multipurpose building. Potentially visible from Boulder or Center streets.

Introduction

This chapter briefly describes the existing environment of the project area. This chapter is organized by the impact topics identified in Chapter 1.

Natural Resources

Soils

The proposed project area is in the southern portion of the Colorado Plateau. The soils tend to be shallow and poorly developed with frequent rock outcroppings. Underlying the soil is Kaibab limestone, a very porous and fossil-laden rock layer. Due to its porosity, this layer has numerous solution channels and sinks, creating subdued karst topography. Precipitation quickly penetrates the soil and rock layers, so little or no surface water is present except during heavy precipitation events.

Most of the area consists of silty/sandy soils with some scattered Kaibab limestone rocks on the surface and a few outcrops broken up into separated fist- and football-sized rocks. Detailed soils mapping was not completed for the project area. Soils have been identified using the General Soils Map of Arizona (Hendricks 1985). Soils within the project area consist of the Roundtop-Boysag Association.

Roundtop soils are moderately deep and well drained. Typically, they have a dark reddish gray gravelly clay loam surface layer about 3 inches thick. The subsoil is reddish brown gravelly heavy clay loam and gravelly clay about 33 inches thick. Roundtop soils occur on rolling plains and hillslopes with slopes ranging from 2 to 30 percent. These soils have moderate available water capacity and slow permeability. Runoff is medium and the hazard of erosion is moderate.

Boysag soils are shallow and well drained. Typically, they have a reddish brown and brown fine sandy loam surface layers about 3 inches thick. Below this is a layer of yellowish red clay about 8 inches thick. Below this, the bedrock is very pale brown calcareous sandstone having widely spaced fractures. Depth to bedrock ranges from 10 to 20 inches. Boysag soils occur on gently undulating hillslopes with slopes ranging from 0 to 8 percent. These soils have low available water capacity and slow permeability. Runoff is slow to medium and the hazard of erosion is slight to moderate.

Fill material was brought in for the playing fields that are on the south side of the Multipurpose building. Much of the fill that was used consists of waste rock from the Orphan Mine.

Exotic Vegetation and Noxious Weeds

Much of the vegetation at Grand Canyon school has been disturbed in the past. Efforts have been made by the NPS staff to revegetate portions of the campus with native plant species. The overstory surrounding the Multipurpose building is composed of about a dozen mature pinyon pine trees (with a diameter of less than 20 inches at breast height) to the north and three ponderosa pine trees (two with diameters greater than 20 inches and one with a diameter of less than 20

inches at breast height) to the south. The pinyon pines act as a screen between the historic junior high school and the Multipurpose building. The understory is largely void of vegetation, most likely because of foot traffic between school buildings. A few bushes have been planted in the area that would be considered for the kitchen expansion under Alternative D.

Surrounding the school campus is ponderosa pine, juniper, pinyon pine and scrub oak habitat. This habitat type is found on level to gently sloping terrain of all aspects and is a transition from pinyon-juniper habitat at the lower elevations to the pure ponderosa pine forest at the higher elevations or sites with moister and deeper soils. Associated species with this habitat type include big sagebrush (*Artemisia tridentata*), bluegrass (*Poa pratensis*), lupine (*Lupinus hillii*), banana yucca (*Yucca baccata*), cliff-rose (*Cowania mexicana*), creeping mahonia (*Berberis repens*), and snowberry (*Symphoricarpos spp.*).

One hundred fifty-nine exotic plant species are known to exist in Grand Canyon National Park. Of these, fourteen are listed on Arizona's noxious weed list. These species and Arizona State status are listed in Table 7.

Table 7. Arizona Noxious Weeds Present in Grand Canyon National Park

Common Name	Scientific Name	Arizona State Status
Rush Skeletonweed	<i>Chondrilla juncea</i>	prohibited
Jointed Goatgrass	<i>Aegilops cylindrica</i>	restricted
Camelthorn	<i>Alhagi maurorum</i>	restricted
White Top	<i>Cardiara draba**</i>	restricted
Spotted Knapweed	<i>Centaurea maculosa</i>	restricted
Dalmatian Toadflax	<i>Linaria dalmatica**</i>	restricted
Scotch Thistle	<i>Onopardum acanthium**</i>	restricted
Field Sandbur	<i>Cenchrus incertus</i>	regulated
Field Bindweed	<i>Convolvulus arvensis</i>	regulated
Puncture Vine	<i>Tribulus terrestris</i>	regulated
Russian Knapweed	<i>Acroptilon repens**</i>	restricted
Diffuse Knapweed	<i>Centraurea diffusa</i>	restricted
Quackgrass	<i>Elymus repens</i>	restricted
Canada thistle	<i>Cirsium arvense</i>	prohibited

** Within Grand Canyon Village, the species of highest concern based on relative abundance, potential spread, and potential impact.

In addition to the species listed in Table 7, there are 13 other species of high concern at Grand Canyon Village based on significance of impact and feasibility of control. These species are listed in Table 8.

Table 8. Exotic Plant Species of High Concern in Grand Canyon Village.

Common Name	Scientific Name
Redtop, Bentgrass	<i>Agrostis stolonifera</i>
Cheatgrass	<i>Bromus tectorum</i>
Smooth brome	<i>Bromus inermis</i>
Squarrose knapweed	<i>C. virgata</i>
Horseweed	<i>Conyza canadensis</i>
Orchardgrass	<i>Dactylis glomerata</i>
Filaree	<i>Erodium cicutarium</i>
Rabbit barley	<i>Hordeum murinum</i>
Horehound	<i>Marrubium vulgare</i>
Kentucky bluegrass	<i>Poa pratensis</i>
Mediterranean sage	<i>Salvia aethiopis</i>
Spiny sow-thistle	<i>Sonchus asper</i>
Johnson grass	<i>Sorghum halapense</i>

Three species are not yet documented on South Rim, but are spreading on surrounding lands: Camelthorn, (*Alhagi maurorum*); Yellow star thistle, (*Centaurea solstitialis*); and, Houndstongue, (*Cynoglossum officinale*).

The campus involved in this analysis and surrounding the Multipurpose building has been cemented over for sidewalks or is devoid of vegetation. A site reconnaissance was completed in November 2001, when most of the plants on site were dormant. Prior to implementing any of the action alternatives, a noxious weed survey would be completed to identify and pre-treat any weeds before construction.

Cultural Resources

The National Historic Preservation Act (as amended) requires agencies to take into account the effects of their actions on properties listed or eligible for listing on the National Register of Historic Places. The process begins with an identification and evaluation of cultural resources for National Register eligibility, followed by an assessment of effect on those eligible resources, and concluding after a consultation process. If an action could change in any way the characteristics that qualify the resource for inclusion on the National Register, it is considered to have an effect. No historic properties affected means that no cultural resources are affected. No adverse effect means there could be an effect, but the effect would not be harmful to those characteristics that qualify the resource for inclusion on the National Register. Adverse effect means the effect could diminish the integrity of the characteristics that qualify the resource for the National Register.

Historic Resources

The Grand Canyon Village Historic District is recognized for exceptional significance as a National Historic Landmark (NHL), encompassing an extensive assemblage of 212 buildings and structures, 44 landscape structures and one site. Historic resources contributing to the district's significance span the period of significance from 1898 to 1941, associated with early tourism development at the South Rim, and subsequent NPS expansion of the developed area. The arrival in 1901 of the Santa Fe Railway and its subsidiary, the Fred Harvey Company, provided the

impetus for substantial tourist-related construction in the area prior to establishment of Grand Canyon National Park in 1919. The district retains a high degree of integrity reflecting the 1924 NPS master plan for the village; the original street plan, organization of developed areas, natural and constructed landscaping, and overall setting remain largely intact (NPS 1995b).

Most of the district's structures date from the 1930s, constructed in the prevailing rustic style that incorporated native building materials, primarily wood and stone. Four early district structures built in the "Craftsman Rustic" and "NPS Rustic" styles are designated individually as National Historic Landmarks: El Tovar Hotel (1905), Grand Canyon Railway Depot (1910), Grand Canyon Powerhouse (1926), and Grand Canyon Park Operations Building (1929). Two additional NHL's, Hopi House (1905) and Lookout Studio (1914), were built by the Santa Fe Railway and designed by renowned architect Mary Jane Colter in her own distinctive rustic style. While located within the Grand Canyon Village Historic District, Hopi House and Lookout Studio are also grouped thematically in the Mary Jane Colter NHL Historic District together with Hermits Rest and Desert View Watchtower, two other Colter-designed buildings.

The Grand Canyon Junior High School (NR # 227) is a National Register Historic Property and a contributor to the Grand Canyon Village Historic Landmark District. Construction on this building was completed in 1939. The Multipurpose building was added to the campus in 1988. It is not eligible for listing on the National Register of Historic Places. The Grand Canyon Village NHL boundary lies between the historic Junior High School and the Multipurpose building. The Multipurpose building, therefore, is outside the boundary of the NHL and not a contributor to the Grand Canyon Village NHL.

The Fred Harvey Gas Station (NR #867) along Center Road is also a contributor to the NHL dating from 1939. It is northeast of the Multipurpose building and screened from view by another non-contributing building on the school's campus.

Residential areas surround the school to house employees that work in the park and their families. The closest residential housing to the school campus is along Boulder Avenue. These buildings have not been nominated for the national register nor are they contributors to the Grand Canyon Village NHL district. Behind this housing area are more residential buildings along Apache Avenue, known as the Atchison Topeka and Santa Fe (AT&SF) residential area (NR # 700, 801-808, 812-823). These building are contributors to the Grand Canyon Village NHL district (NPS 1995b).

Cultural Landscapes

A cultural landscape inventory was completed in 1995 for Grand Canyon Village during its nomination as a NHL district. In addition to the contributing buildings mentioned in the previous section, three landscape features are found within close proximity to the school campus that are contributors to the NHL (NR # L45-L47). All of these are headwall structures dating from 1935. Two are along Boulder Street and one along Center Road (*Ibid.*).

Center Road and Boulder Street (Avenue B) are contributing structures (NR # L50) and part of the district roads that were built between 1901 and 1936 (*Ibid.*).

The setting of the district is dominated by the gently rolling topography atop the rim and the canyon's edge. The buildings within the historic district were designed with a rustic influence using native building materials, such as stone and wood. The district maintains a high degree of integrity in design, materials, and workmanship related to its period of significance between 1898 and 1941. Many of the structures date back to the 1930's, which is when the Junior High School was built.

The historic Junior High School was built using native building materials of stone and wood. Several mature pinyon pine trees influence the landscape of the historic building and assist in screening the more modern buildings associated with the school's campus from the historic structure; however, they are not contributing features of the cultural landscape. The cultural landscape surrounding the historic school building has been modified over the years by additional school buildings with more modern design and building materials, such as the Multipurpose building. However, these buildings were designed to remain subordinate to the original historic Junior High school, and the vegetation surrounding the buildings lessens the visual impact.

Visual Quality

The Grand Canyon is valued worldwide as one of the most powerful and inspiring scenic landscapes. It is widely considered one of the world's most beautiful areas by providing a great diversity in scenery and panoramic vistas.

Grand Canyon School is visible from Boulder and Center streets, as well as a few vistas and viewpoints along the South Rim.

The visual quality or character of the landscape surrounding the school is typical of Grand Canyon Village – that is, it has been greatly modified by man-made structures, roads, utilities, and vehicles. However, the gentle topography of the South Rim area combined with the varied canopy of trees (mature ponderosa pines, pinyon pines, juniper, and oak) provides a moderately high degree of visual absorption capacity for the landscape.

Introduction

This chapter describes the direct, indirect, and cumulative environmental consequences of the alternatives. It is organized by impact topic, with a discussion of the environmental consequences for each alternative. Environmental consequences are the effects and impacts on the physical, biological, social, and economic environment that may be caused by implementing an alternative. Potential impacts are described in terms of type, context, duration, and intensity, as defined below. Direct, indirect, and cumulative effects, as well as impairment are also analyzed for each resource topic carried forward in the analysis. Because this document serves as a combined EA/AEF, a separate methodology for cultural resources is included in this introduction.

Type describes the classification of the impact as beneficial or adverse, and direct or indirect:

-Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.

-Adverse: A change that moves the resource away from a desired condition or detracts from its appearance or condition.

-Direct: An effect that is caused by an action and occurs in the same time and place.

-Indirect: An effect that is caused by an action but is later in time or farther removed in distance, but is still reasonably foreseeable.

Context describes the area or location in which the impact will occur. Are the effects site-specific, local, regional, or even broader?

Duration describes the length of time an effect will occur, either short-term or long-term:

-Short-term impacts generally last only during construction, and the resources resume their pre-construction conditions following construction.

-Long-term impacts last beyond the construction period, and the resources may not resume their pre-construction conditions for a longer period of time following construction.

Intensity describes the degree, level, or strength of an impact. For this analysis, intensity has been categorized into negligible, minor, moderate, and major. Because definitions of intensity vary by resource topic, intensity definitions are provided separately for each impact topic analyzed in this EA/AEF.

Cultural Resources and Section 106 of the National Historic Preservation Act

In this EA/AEF, impacts to cultural resources are described in terms of type, context, duration, and intensity, as described above, which is consistent with the regulations of the Council on Environmental Quality (CEQ) that implement the NEPA. These impact analyses are intended, however, to comply with the requirements of both NEPA and Section 106 of the National Historic Preservation Act (NHPA). In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the NHPA (36 CFR §800, Protection of Historic Properties), impacts to cultural resources were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that were either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize or mitigate adverse effects.

Under the Advisory Council's regulations a determination of either adverse effect or no adverse effect must also be made for affected cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualify it for inclusion in the National Register, e.g. diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the preferred alternative that would occur later in time, be farther removed in distance or be cumulative (36 CFR §800.5, Assessment of Adverse Effects). A determination of no adverse effect means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

CEQ regulations and the National Park Service's Conservation Planning, Environmental Impact Analysis and Decision-making (Director's Order – 12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g. reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse.

A Section 106 summary is included in the impact analysis sections for cultural resources under the preferred alternative. The Section 106 Summary is intended to meet the requirements of Section 106 and is an assessment of the effect of the undertaking (implementation of the alternative) on cultural resources, based upon the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

Impairment of Park Resources or Values

In addition to determining the environmental consequences of the alternatives, NPS policy (NPS Management Policies 2001) requires analysis of potential effects to determine whether or not actions would impair park resources.

The fundamental purpose of the national park system, established by the Organic Act of 1916 and reaffirmed by the General Authorities Act of 1970, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to

minimize to the greatest degree practicable, adverse impacts on park resources and values. However, the laws give the NPS the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of the park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the NPS the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute impairment. An impact would constitute impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- Identified as a goal in the park's GMP or other relevant NPS planning documents.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park.

Cumulative Effects

The CEQ regulations, which implement the NEPA, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all the alternatives.

Cumulative impacts were determined by combining the impacts of the proposed kitchen expansion with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects in Grand Canyon Village and, if applicable, the surrounding region.

The largest foreseeable future action that could occur in the vicinity of Grand Canyon Village is the implementation of a transit system from Tusayan to Mather Point, with a spur into the village. This project was identified in the General Management Plan. Alternative transportation systems being evaluated include light rail, buses on a dedicated roadway, and conventional buses on shared roads. Planning and environmental documentation are ongoing for this project, and implementation could occur within the next five years.

Other foreseeable future actions that involve new construction include the Horace Albright Training Center, NPS maintenance facility, mule barn, greenway trails, back country permits office, learning center housing, and Pinyon Park housing. Foreseeable future actions that involve rehabilitation and/or reuse of existing facilities include the Heritage Education Campus, Grand Canyon Village restrooms, Ranger Operations building, Yavapai observation station, visitor center/park headquarters, and a bike rental facility.

Natural Resources

Soils

Methodology

All available information on geological resources in the park was compiled. The information is based on the Park's GMP (1995a).

The thresholds of change for the intensity of an impact are defined as follows:

Negligible: An action that could result in a change to a natural physical resource, but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor: An action that could result in a change to a natural physical resource, but the change would be small and localized and of little consequence.

Moderate: An action that would result in a change to a natural physical resource; the change would be measurable and of consequence.

Major: An action that would result in a noticeable change to a natural physical resource; the change would be measurable and result in a severely adverse or major beneficial impact.

Alternative A – No Action

Direct/Indirect Impacts: As no new construction activities would occur, there would be no change in or impacts to soil conditions.

Cumulative Impacts: No action in this analysis means that the proposed kitchen expansion at Grand Canyon school would not be built. Therefore, there would be no cumulative impacts to soils as a result of implementing this alternative.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: There would be no impact to soils from implementing no action.

Alternative B

Direct/Indirect Impacts: The impacts to soil resources from implementing Alternative B would be considered to be long-term and negligible mainly due to soil displacement. The area needed to construct the kitchen and connect utilities would be approximately 2,400 square feet (0.05 acres). Construction would include grading, smoothing, and preparing the soils for a cement foundation for the building, and trenching a ditch less than 12-inches-wide for utilities. These soils have already been disturbed during the original construction of the Multipurpose building in 1988, and the area is essentially level. Therefore, only limited amounts of soil, if any, would be removed to prepare the site for foundation work.

Impacts from compaction would be negligible due to the shallow, coarse, and stony nature of the soils along the South Rim. In addition, surface runoff rates and soil loss due to erosion would be negligible because of the limited amount of disturbance that would occur, implementation of best management practices, and lack of surface runoff due to evapotranspiration and high permeability of the underlying substrate.

Cumulative Impacts: The combined impact of this proposal with past, present, and foreseeable future actions would result in the continued compaction and displacement of soils from construction and development projects. Compaction would be limited in intensity due to the shallow, coarse, and stony nature of the soils along the South Rim. Displacement from soil erosion would probably be the impact of greatest concern because of the extent of soil disturbed during construction. However, soil loss would be minimized through implementation of standard erosion control measures. Cumulatively, impacts to soils would be long-term and minor.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: The impacts to soil resources from implementing Alternative B would be considered to be long-term and negligible mainly due to soil displacement. Cumulatively, impacts to soils would be long-term and minor.

Alternative C – Preferred Alternative

Direct/Indirect Impacts: Impacts to soils would be similar to those described under Alternative B. Soils that would be disturbed include the area needed for the kitchen expansion and utility connection (5,000 sq. ft.). In addition, soils would be disturbed to relocate the existing gas line that runs under the proposed expansion area and to relocate a man-made drainage that was constructed to divert runoff away from the Multipurpose building and other structures on the campus. The existing drainage is approximately 3 feet deep and 2 feet wide. Relocating this drainage would require removing approximately 4.45 cubic yards of soil to create a trench equal to the existing drainage. This would result in long-term minor impacts to soils.

Cumulative Impacts: Impacts to soils would be the same as those described under Alternative B.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: Impacts to soils would be long-term and minor. Cumulatively, impacts to soils would be long-term and minor.

Alternative D

Direct/Indirect Impacts: The type of impacts would be similar to those described under Alternative B. Impacts to soil resources from implementing Alternative D would be considered to be long-term and negligible, mainly due to soil displacement. The area needed to construct the

kitchen and connect utilities under this alternative would be approximately 3,800 square feet (0.09 acres), as well as up to 100 linear feet for utility and infrastructure relocation.

These soils have already been disturbed during the original construction of the Multipurpose building and the area is essentially level; therefore, only limited amounts of soil, if any, would be removed to prepare the site for foundation work.

Cumulative Impacts: Impacts to soils would be the same as those described under Alternative B.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: Impacts to soils, primarily from soil displacement, would be long-term and negligible. Cumulatively, impacts to soils would also be long-term and minor.

Exotic Vegetation and Noxious Weeds

Methodology

All available information on known exotic plants and noxious weeds was compiled. Where possible, map locations of known populations were compared with locations of proposed developments. Predictions about short- and long-term site impacts were based on previous studies and recent monitoring data.

The thresholds of change for the intensity of an impact are defined as follows:

Negligible: An action that could result in the spread of noxious weeds, but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor: An action that could result in the spread of noxious weeds. The change would be small and localized and of little consequence.

Moderate: An action that would result in the spread of noxious weeds. The change would be measurable and of consequence to the species or resource but more localized.

Major: An action that would have a noticeable invasion of noxious weeds. The change would be measurable and result in a severely adverse or major beneficial impact, and possible permanent consequence, upon the biotic community or resource.

Alternative A – No Action

Direct/Indirect Impacts: As no new ground disturbing activities would occur, there would be no direct impacts to exotic vegetation and noxious weeds.

Cumulative Impacts: Alternative A would not contribute to the cumulative invasion or spread of exotic vegetation and noxious weeds in the park. Existing development has created disturbances that have allowed the introduction of exotic plants and noxious weeds. Foreseeable future projects would increase the potential for noxious weeds and exotic plants to spread in the park at a rate that is difficult for the existing control programs to manage. Mitigation measures would be

implemented for any future projects to reduce the potential for spread or introduction of exotic plants or noxious weeds.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: There would be no impacts to exotic vegetation or noxious weeds.

Alternative B

Direct/Indirect Impacts: Approximately 2,400 square feet (0.05 acres) of ground would be disturbed under this alternative for the kitchen expansion and utility connection. Ground disturbance would increase the short-term risk of spreading existing populations and introduction of new exotic vegetation or noxious weeds. This area is already either lacking vegetative ground cover or is covered with a cement sidewalk. Mitigation measures would be implemented with this alternative, such as pressure washing equipment to reduce the short-term risk of spread and introduction. Mitigation measures, such as re-landscaping the disturbance, post-construction monitoring, and follow-up treatments, would be implemented to reduce the intensity of impact and long-term risk of spread and introduction of exotic plants or noxious weeds.

Additionally, up to four pinyon pine trees with a diameter less than 20 inches would be removed or pruned to accommodate an addition on the north side of the Multipurpose building. However, trees of similar species and size would be planted in the open area between the Multipurpose building and the historic Junior High School to reduce any impact from the loss of the trees.

Cumulative Impacts: Ground disturbance associated with past, present, and foreseeable future developments would increase the long-term potential for spread and introduction of exotic vegetation. However, the ongoing exotic vegetation control program would continue and would help reduce the long-term risk of spread of existing exotic vegetation from past and present disturbed sites. Foreseeable future projects are expected to incorporate mitigation measures to reduce the risk of spread and introduction of exotic vegetation. The combined impact of this proposal with past, present, and foreseeable future actions would be long-term minor adverse impact from the continued ground disturbance and continued trend of increased potential for spread and introduction of exotic vegetation.

The removal of up to four trees would add to the cumulative impact of vegetation removal that is currently occurring from implementation of projects and proposed to occur under future projects. However, the replacement of the trees would nullify this impact. Cumulatively, this has the potential to have a moderate impact on the canopy coverage on the South Rim.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: There would be short-term, negligible direct or indirect impacts to exotic vegetation and noxious weeds resulting from the increased risk of spread and introduction of exotic

vegetation or noxious weeds immediately after construction. Mitigation measures associated with this alternative should be sufficient to reduce the risk such that it does not become a long-term impact to the site and any spread or introduction is immediately contained. There would also be a long-term negligible impact to vegetation from the removal of up to four pinyon pine trees, which would be replaced with similar size and type of tree. Cumulatively, impacts to vegetation and noxious weeds would be minor over the long-term,

Alternative C – Preferred Alternative

Direct/Indirect Impacts: Approximately 5,000 square feet (0.1 acres) of ground would be disturbed under this alternative. Ground disturbance would increase the short-term risk of spreading existing populations and introduction of new exotic vegetation or noxious weeds. This alternative would disturb the greatest amount of ground; however, this area has already been disturbed during the construction of the Multipurpose building. Mitigation measures would be implemented with this alternative, such as pressure washing equipment to reduce the short-term risk of spread and introduction. Mitigation measures, such as re-landscaping the disturbance, post-construction monitoring, and follow-up treatments, would reduce the intensity of impact and long-term risk of spread and introduction. As a result, this alternative would have a short-term minor impact on exotic vegetation and noxious weeds.

Additionally, two ponderosa pine trees with a diameter greater than 20 inches would be removed to allow the addition on the south side of the Multipurpose building.

Cumulative Impacts: Cumulative impacts to exotic vegetation and noxious weeds would be the same as those described under Alternative B.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: There would be short-term minor impacts to vegetation. Cumulatively, impacts to vegetation would be minor over the long-term.

Alternative D

Direct/Indirect Impacts: Approximately 3,800 square feet (0.09 acres) of ground would be disturbed under this alternative for the kitchen expansion and utility connections/relocation. A few bushes would be removed, which were planted in the area that would be used for the kitchen expansion. Ground disturbance would increase the short-term risk of spreading existing populations and introduction of new exotic vegetation or noxious weeds. Mitigation measures would be implemented with this alternative, such as pressure washing equipment would reduce the short-term risk of spread and introduction. Mitigation measures, such as re-landscaping the disturbance, post-construction monitoring, and follow-up treatments, would reduce the intensity of impact and long-term risk of spread and introduction. As a result, this alternative would have a short-term minor impact on exotic vegetation and noxious weeds.

Cumulative Impacts: Cumulative impacts to exotic vegetation and noxious weeds would be the same as those described under Alternative B.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: There would be minor direct or indirect impacts to vegetation. Cumulatively, impacts to vegetation would be minor over the long-term.

Cultural Resources

Historic Resources

Methodology

In order for a structure or building to be listed in the National Register of Historic Places, it must be associated with an important historic context, i.e. possess significance – the meaning or value ascribed to the structure or building, *and* have integrity of those features necessary to convey its significance, i.e. location, design, setting, workmanship, materials, feeling, and association (see National Register Bulletin #15, *How to Apply the National Register Criteria for Evaluation* [NPS 1995c]). For purposes of analyzing potential impacts to historic structures/buildings, the thresholds of change for the intensity of an impact are defined as follows:

Negligible: Impact(s) is at the lowest levels of detection - barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Minor: Adverse impact – Impact would not affect the character defining features of a National Register of Historic Places eligible or listed structure or building.

Beneficial impact – Stabilization/ preservation of character defining features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (NPS 1995d), to maintain existing integrity of a structure or building. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate: Adverse impact – Impact would alter a character defining feature(s) of the structure or building but would not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized.

Beneficial impact – Rehabilitation of a structure or building in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (NPS 1995d), to make possible a compatible use of the property while preserving its character defining features. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major: Adverse impact – Impact would alter a character defining feature(s) of the structure or building, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be *adverse effect*.

Beneficial impact – Restoration in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (NPS 1995d), to accurately depict the form, features, and character of a structure or building as it appeared during its period of significance. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Alternative A – No Action

Direct/Indirect Impacts: No ground disturbing activities would be conducted under this alternative; therefore, there would be no impact to the historic structures on the Grand Canyon school campus, including the historic Junior High School building. Historic structures would not be altered, nor would new construction occur that could impact the integrity of the Grand Canyon Village Historic District.

Cumulative Impacts: Alternative A would not contribute to cumulative impacts on identified historic resources. Some historic structures at the South Rim and throughout the Grand Canyon have been adversely impacted from past construction disturbance, perhaps occurring before establishment of the park and/or as a result of inadvertent impacts prior to the legal requirements for archeological survey, site protection, and mitigation. Visitor use pressures have also contributed to past impacts. Combined with increasing visitor use in the area, other current and foreseeable construction projects (e.g. proposed light rail transportation system, greenway, and other facilities) also have the potential to impact historical resources. If adverse impacts could not be avoided, the NPS would implement data recovery excavations or other mitigation measures.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: There would be no impact to historic resources from this alternative.

Alternative B

Direct/Indirect Impacts: The kitchen expansion proposed under this alternative is approximately 30 feet from the historic Junior High School building, which is a contributor to the Grand Canyon Village Historic District. Although not directly affecting the historic building, this alternative would have an indirect effect on the structure by disturbing the area that surrounds the structure. Although this alternative would negatively affect the Junior High School, it would not compromise the NHL status, as the school is considered a secondary element of the NHL district. The primary elements are in the center of the village and would not be affected by this undertaking.

The area surrounding the school has been disturbed in the past with other buildings that have been added to the campus, including the Multipurpose building, which was built in 1988. Several mature pinyon pines act as a screen between the historic building and the Multipurpose building (Photo 1). Under this alternative, up to four trees would be removed or pruned (Photo 2) – one of which has already been scheduled for removal by the NPS because it is dead. Development of the exterior design would occur in consultation with a Historical Architect. With appropriate and compatible design, new construction at this location would be expected to have a moderate adverse impact on the district's historic architectural character.



Photo 1. Landscape of Multipurpose Building as Viewed from the Historic Junior High School.

Cumulative Impacts: Construction of the kitchen under Alternative B, when combined with other past, present, and foreseeable future projects on the South Rim would have a moderate impact on historic resources. Some historic structures at the South Rim and throughout the Grand Canyon have been adversely impacted from past construction disturbance, perhaps occurring before establishment of the park and/or as a result of inadvertent impacts prior to the legal requirements for archeological survey, site protection, and mitigation. Visitor use pressures have also contributed to past impacts. Combined with increasing visitor use in the area, other current and foreseeable construction projects (e.g. proposed light rail transportation system, greenway, and other facilities) have the potential to impact historical resources. The NPS would avoid or mitigate potential adverse impacts by ensuring that new construction underwent internal review by NPS staff, and that preservation maintenance and/or more comprehensive rehabilitation are carried out in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995d).

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: Indirectly, this action may have a long-term moderate impact on historic resources, but would not compromise the NHL status of the Grand Canyon Village Historic District. Cumulatively, it may also result in a moderate, long-term impact.

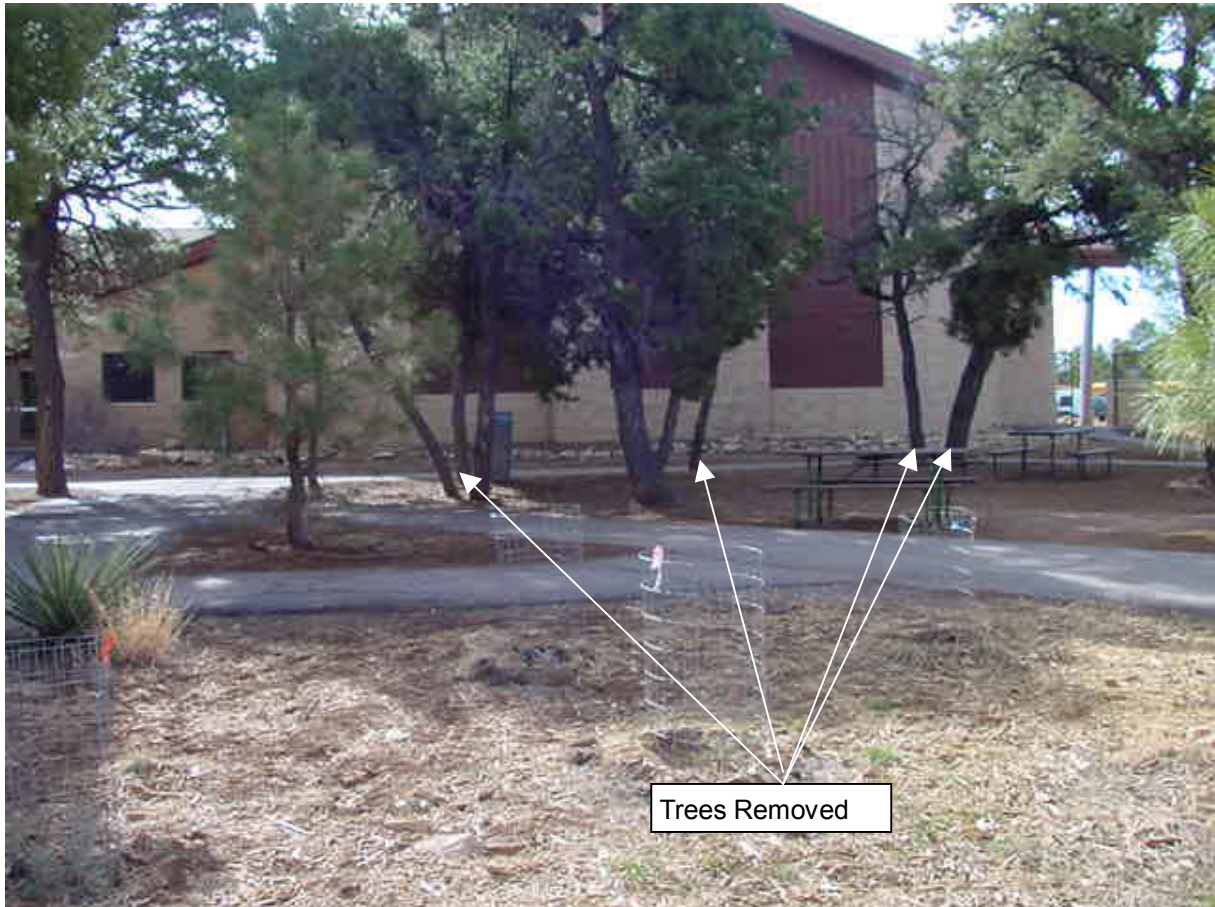


Photo 2. Landscape of Multipurpose Building as Viewed from the Historic Junior High School under Alternative B.

Alternative C – Preferred Alternative

Direct/Indirect Impacts: This alternative is situated on the south side of the Multipurpose building; therefore, it would have the least amount of impact on the historic Junior High School building and would not compromise the NHL status of the Grand Canyon Village Historic District. This area has been disturbed in the past with other buildings that have been added to the Grand Canyon school campus, including the Multipurpose building, which was built in 1988. Two mature ponderosa pine trees would be removed to allow the expansion of the building (Photo 3). Development of the exterior design would occur in consultation with a Historical Architect. With appropriate and compatible design, new construction at this location would be expected to have a negligible adverse impact on the district's historic architectural character.

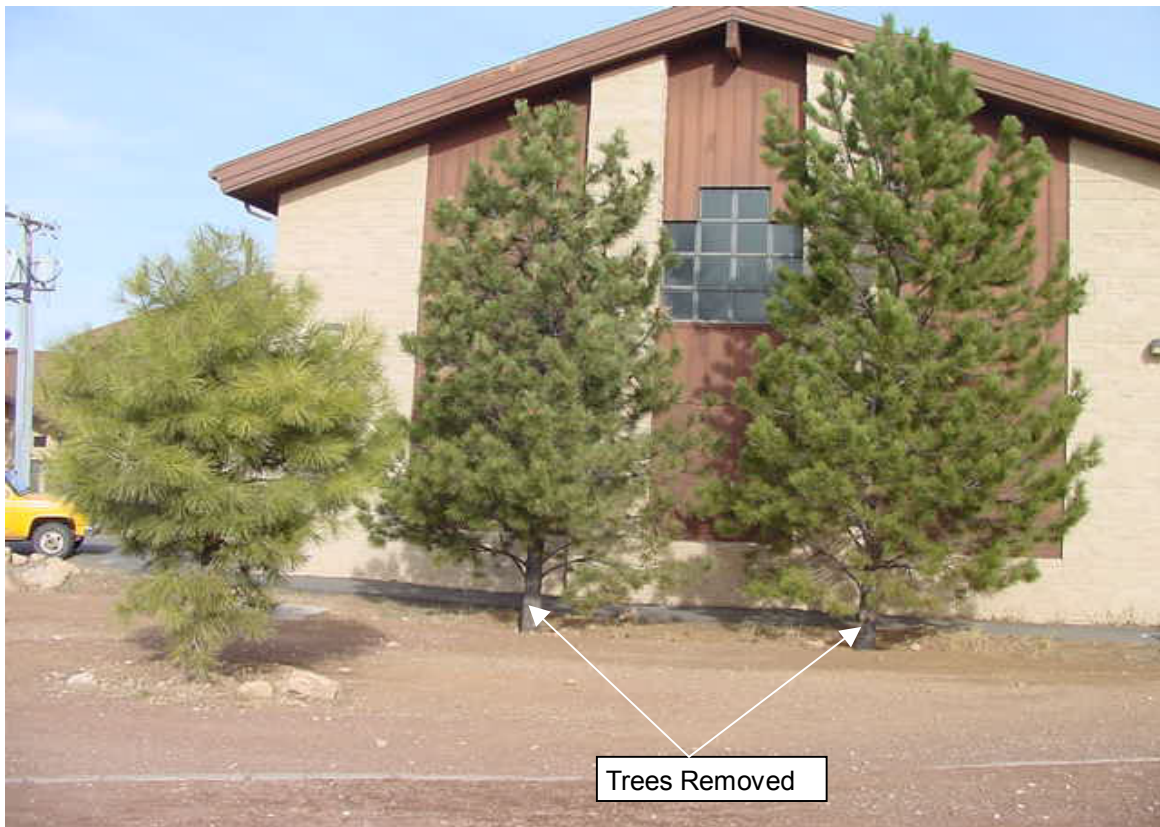


Photo 3. Landscape of Multipurpose Building as Viewed from the Playing Fields under Alternative C.

Cumulative Impacts: Construction of the kitchen under Alternative C, when combined with other past, present, and foreseeable future projects on the South Rim would have a minor impact on historic resources. As described under Alternative B, some historic structures at the South Rim and throughout the Grand Canyon have been adversely impacted from past construction disturbance, perhaps occurring before establishment of the park and/or as a result of inadvertent impacts prior to the legal requirements for archeological survey, site protection, and mitigation. Visitor use pressures have also contributed to past impacts. Combined with increasing visitor use in the area, other current and foreseeable construction projects (e.g. proposed light rail transportation system, greenway, and other facilities) have the potential to impact historical resources. The NPS would avoid or mitigate potential adverse impacts by ensuring that new construction underwent internal review by NPS staff, and that preservation maintenance and/or more comprehensive rehabilitation are carried out in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995d).

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Section 106 Summary: After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR §800.5, Assessments of Adverse Effects), implementation of Alternative C would have no adverse effect on any National Register eligible sites or properties. Project undertakings would not substantially diminish the character-defining qualities for which identified historic properties (e.g. Grand Canyon Village Historic District) are listed in the National Register of Historic Places.

Conclusion: Indirectly, this action may have a long-term negligible impact on historic resources, but would not compromise the NHL status of the Grand Canyon Village Historic District. Cumulatively, it may result in a minor long-term impact.

Alternative D

Direct/Indirect Impacts: This site would be the closest alternative (approximately 20 feet) from the historic Junior High School building, which is a contributor to the Grand Canyon Village Historic District. Although not directly affecting the historic building, this alternative would have an indirect effect on the structure by disturbing the area that surrounds the structure. Although this alternative would negatively affect the Junior High School, it would not compromise the NHL status, as the school is considered a secondary element of the NHL district. The primary elements are in the center of the village and would not be affected by this undertaking.

The area surround the school has been disturbed in the past with other buildings that have been added to the campus, including the Multipurpose building, which was built in 1988. Several mature pinyon pines act as a screen between the historic building and the Multipurpose building. Under this alternative, only the tree which is dead would be removed. The bushes that exist on site do little to screen the Multipurpose building from the historic school building (Photo 4). Development of the exterior design would occur in consultation with a Historical Architect. With appropriate and compatible design, new construction at this location would be expected to have a moderate adverse impact on the district's historic architectural character.

Cumulative Impacts: Cumulative impacts to historic resources would be the same as those described under Alternative B.



Photo 4. Landscape of Multipurpose Building as Viewed from the Historic Junior High School under Alternative D.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: Indirectly, this action may have a long-term moderate impact on historic resources, but would not compromise the NHL status of the Grand Canyon Village Historic District. Cumulatively, it may also result in a moderate, long-term impact.

Cultural Landscape

Methodology

Cultural landscapes are the result of long interaction between people and the land, the influence of human beliefs, and their actions over time on the natural landscape. Cultural landscapes provide a living record of an area's past, a visual chronicle of its history which has been shaped through time by historical land-use and management practices, as well as politics and property laws, levels of technology, and economic conditions. The dynamic nature of modern human life, however, contributes to the continual reshaping of cultural landscapes; making them a good source of information about specific times and places, but at the same time rendering their long-term preservation a challenge.

For a cultural landscape to be listed on the National Register, it must possess significance (the meaning or value ascribed to the landscape) *and* have integrity of those features necessary to convey its significance. The character defining features of a cultural landscape include spatial organization and land patterns; topography; vegetation; circulation patterns; water features; and structures/buildings, site furnishings and objects (see *The Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for the Treatment of Cultural Landscapes*, [NPS 1996]). For purposes of analyzing potential impacts to cultural landscapes, the thresholds of change for the intensity of an impact are defined as follows:

Negligible: Impact(s) is the lowest level of detection - barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Minor: Adverse impact – Impact would not affect the character defining features of a National Register of Historic Places eligible or listed cultural landscape.

Beneficial impact – Preservation of character defining features in accordance with the Secretary of Interior's standards, to maintain the integrity of the cultural landscape. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate: Adverse impact – Impact would alter a character defining feature(s) of the cultural landscape but would not diminish the integrity of the landscape to the extent that its National Register eligibility is jeopardized.

Beneficial impact – Rehabilitation of a landscape or its features in accordance with the Secretary of the Interior's standards, to make possible a compatible use of the landscape while preserving its character defining features. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major: Adverse impact – Impact would alter a character defining feature(s) of the cultural landscape, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be *adverse effect*.

Beneficial impact – Restoration in accordance with the Secretary of the Interior’s standards, to accurately depict the features and character of a landscape as it appeared during its period of significance. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Alternative A – No Action

Direct/Indirect Impacts: No ground disturbing activities would be conducted under this alternative; therefore, there would be no impact to the cultural landscape. Figure 6 shows the existing elevation of the Multipurpose building. Several mature pinyon pine trees currently screen the view of the Multipurpose building as it is viewed from the historic junior high school (Photo 1).

Cumulative Impacts: Alternative A would not contribute to cumulative adverse impacts on the Grand Canyon Village Historic District. The historic integrity of some buildings and structures within the district is threatened by structural deterioration. Likewise, construction of modern, non-contributing buildings has compromised the district’s architectural integrity to a minor degree. Other foreseeable projects (e.g. restoration of the ranger operations building, proposed Heritage Education Campus, new NPS maintenance facility, etc.) also have the potential to impact historic buildings scheduled for adaptive use, or to visually alter the district’s historic setting as a result of new construction. The NPS would avoid or mitigate potential adverse impacts by ensuring that new construction underwent internal review by NPS staff, and that preservation maintenance and/or more comprehensive rehabilitation is carried out in conformance with the Secretary of the Interior’s Standards for the Treatment of Historic Properties (NPS 1995d).

Impairment: There would be no impairment of the Grand Canyon National Park’s resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park’s GMP or other relevant NPS planning documents.

Conclusion: There would be no impact to the cultural landscape from this alternative.

Alternative B

Direct/Indirect Impacts: The proposed expansion on the north side of the Multipurpose building has the potential to visually intrude on the integrity of the district’s historic setting, particularly the historic Junior High School building. The other defining features of the cultural landscape – the headwalls along Center Road and Boulder Street and the Fred Harvey Gas Station would not be affected by this alternative because they are far enough removed from the project area, downslope, and screened from view by other buildings and vegetation.

Figure 7 shows the proposed elevation of the Multipurpose building under Alternative B. Photo 2 shows the landscape as it would be viewed from the historic Junior High School – noting the trees that would require removal or pruning. Trenching would also be required to connect existing utilities to the building. Therefore, Alternative B would result in a moderate long-term adverse impact on the cultural landscape of the historic Junior High School.

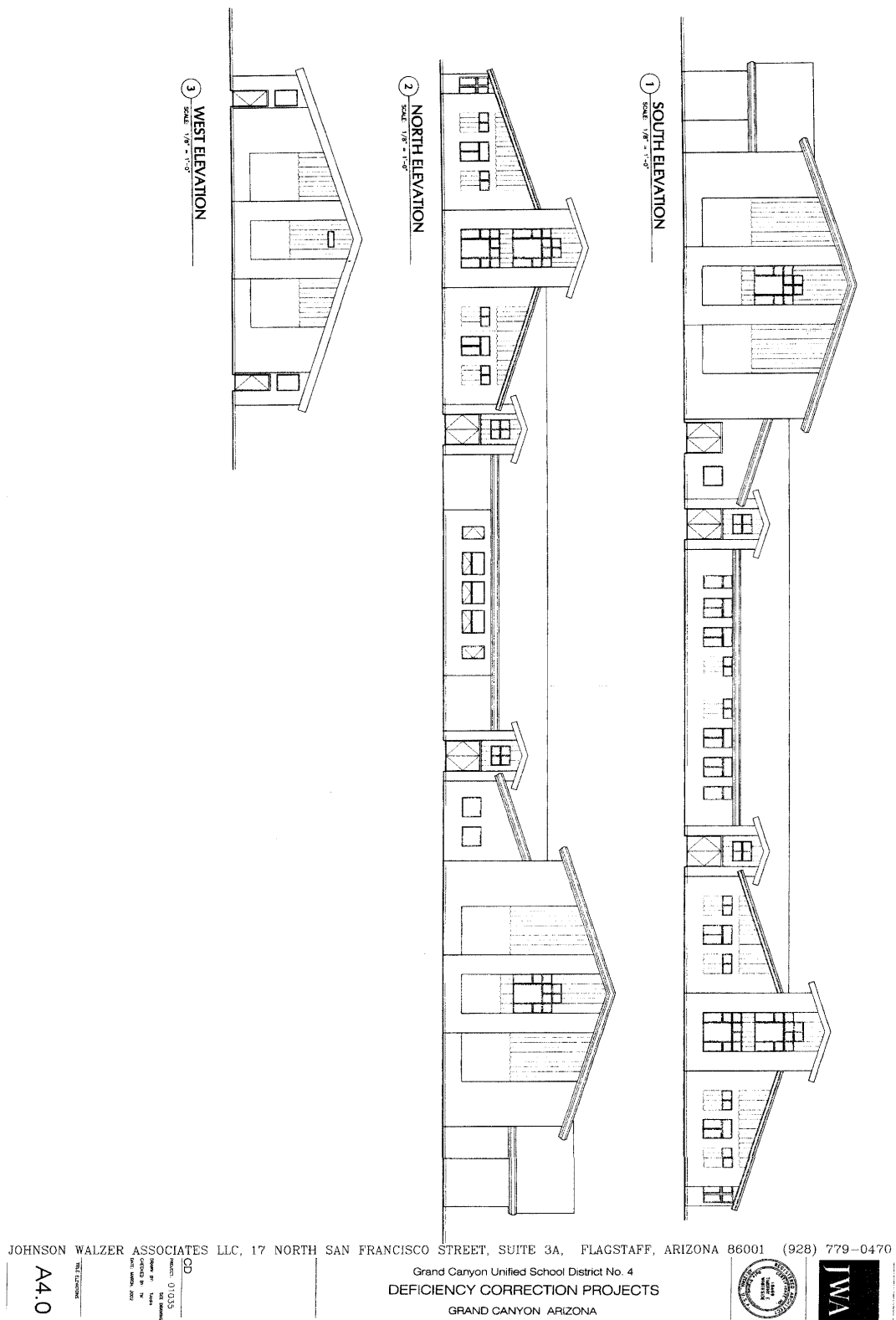


Figure 6. Existing Elevation of Multipurpose Building

Cumulative Impacts: Construction of the kitchen under Alternative B, when combined with other past, present, and foreseeable future project on the South Rim would have a moderate impact on the cultural landscape. Construction of modern, non-contributing buildings has compromised the district's architectural integrity to a moderate degree. Other foreseeable projects (e.g. restoration of the ranger operations building, proposed heritage education campus, new NPS maintenance facility, etc.) also have the potential to impact historic buildings scheduled for adaptive use, or to visually alter the district's historic setting as a result of new construction. The NPS would avoid or mitigate potential adverse impacts by ensuring that new construction underwent internal review by NPS staff, and that preservation maintenance and/or more comprehensive rehabilitation is carried out in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995d).

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

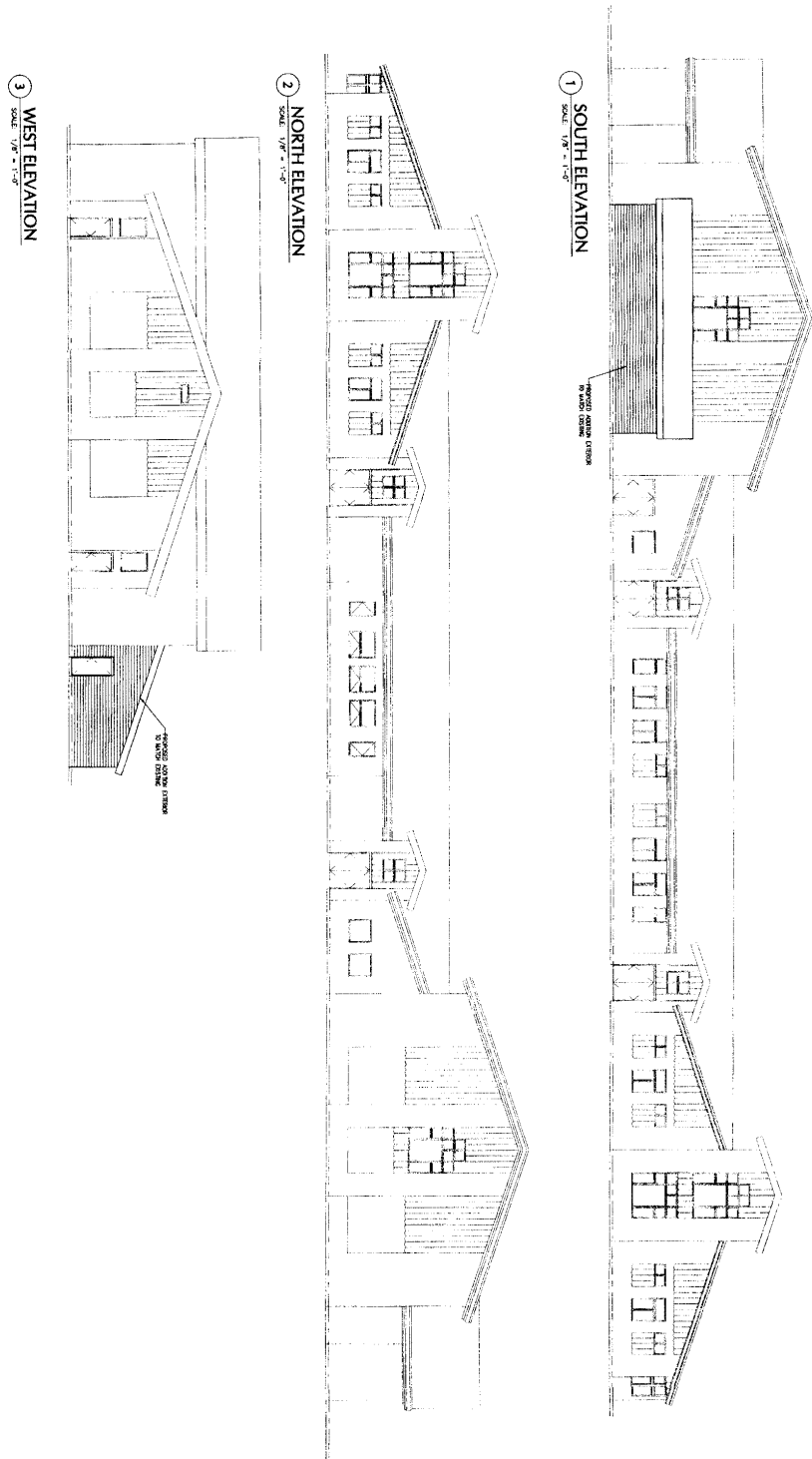
Conclusion: Indirectly, this action may have a long-term moderate impact on the cultural landscape of Grand Canyon Village. Cumulatively, it may also result in a moderate long-term impact.

Alternative C – Preferred Alternative

Direct/Indirect Impacts: An addition to the south side of the Multipurpose building has the least potential to visually intrude on the integrity of the historic Junior High School building. Because the proposed expansion would not be visible from the historic building, the intrusion would be negligible. The other defining features of the cultural landscape – the headwalls along Center Road and Boulder Street and the Fred Harvey Gas Station would not be affected by this alternative because they are far enough removed from the project area, downslope, and screened from view by the Multipurpose building, other buildings, and vegetation.

The only impact would be from trenching in order to connect existing water and sewer lines from the north side of the Multipurpose building. As described under Alternative B, the NPS would avoid or mitigate potential adverse impacts by ensuring that new construction underwent internal review by NPS staff. Figure 8 shows the proposed elevation of the Multipurpose building under Alternative C. Photo 3 shows the landscape as it would be viewed from the playing fields – noting the trees that would require removal.

Cumulative Impacts: Construction of the kitchen under Alternative C, when combined with other past, present, and foreseeable future project on the South Rim would have a minor impact on the cultural landscape. Construction of modern, non-contributing buildings has compromised the district's architectural integrity to a minor degree. Other foreseeable projects (e.g. restoration of the ranger operations building, proposed heritage education campus, new NPS maintenance facility, etc.) also have the potential to impact historic buildings scheduled for adaptive use, or to visually alter the district's historic setting as a result of new construction. The NPS would avoid or mitigate potential adverse impacts by ensuring that new construction underwent internal review by NPS staff, and that preservation maintenance and/or more comprehensive rehabilitation is carried out in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1995d).



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Grand Canyon Unified School District No. 4
DEFICIENCY CORRECTION PROJECTS
GRAND CANYON, ARIZONA

CD
PROJECT: 01035
DATE: 12/14/14
SCALE: 1/8\"/>

A4.2



Figure 8. Proposed Elevation of Multipurpose Building under Alternative C.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Section 106 Summary: After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR §800.5, Assessments of Adverse Effects), implementation of Alternative C would have no adverse effect on any National Register eligible sites or properties. Project undertakings would not substantially diminish the character-defining qualities for which identified historic properties (e.g. Grand Canyon Village Historic District) are listed in the National Register of Historic Places.

Conclusion: Indirectly, this action may have a long-term negligible impact on the cultural landscape. Cumulatively, it may result in a minor, long-term impact.

Alternative D

Direct/Indirect Impacts: An addition to the north side of the Multipurpose building has the potential to visually intrude on the integrity of the historic Junior High School building. This alternative would be the closest to the historic building (approximately 20 feet). The other defining features of the cultural landscape – the headwalls along Center Road and Boulder Street and the Fred Harvey Gas Station would not be affected by this alternative because they are far enough removed from the project area, downslope, and screened from view by other buildings and vegetation.

Figure 9 shows the proposed elevation of the Multipurpose building under Alternative D. Photo 4 shows the landscape as it would be viewed from the historic Junior High School. Trenching would also be required under this alternative to connect existing utilities with the building.

The NPS would avoid or mitigate potential adverse impacts by ensuring that new construction underwent internal review by NPS staff. For example, the new addition would harmonize with the area and the cultural resources in proportion, color, vernacular style, and texture. Alternative D would result in moderate, long-term adverse impacts on the cultural landscape of the district.

Cumulative Impacts: Cumulative impacts to the cultural landscape would be the same as those described under Alternative B.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: Indirectly, this action may have a long-term moderate impact on the cultural landscape. Cumulatively, it may also result in a moderate, long-term impact.

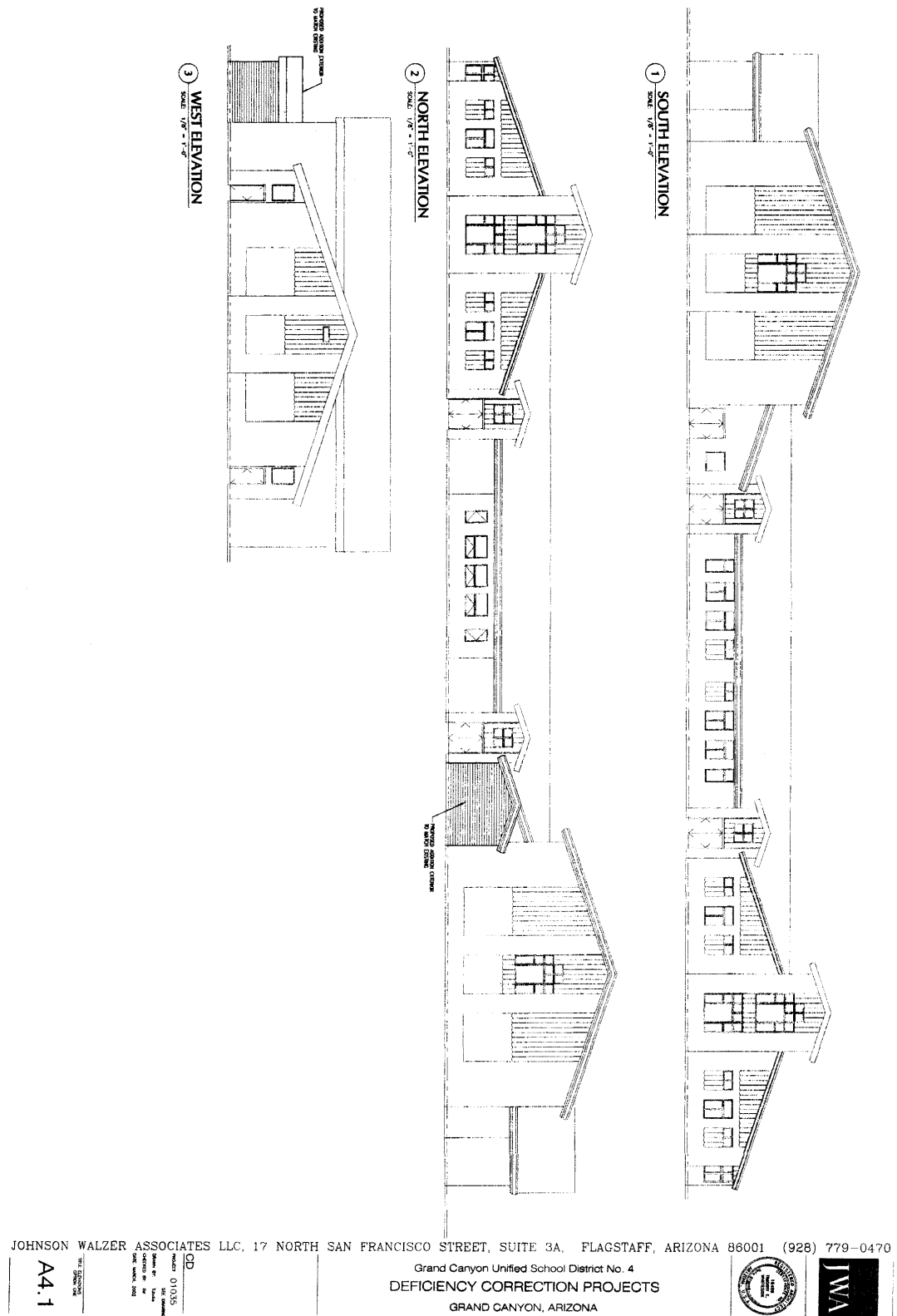


Figure 9. Proposed Elevation of the Multipurpose Building under Alternative D.

Visual Quality

Methodology

All available information on known viewshed corridors and sensitive viewpoints and vistas was compiled. Map locations of these areas were compared with locations of proposed developments. Visual attributes of the affected lands were characterized. Predictions about short- and long-term site impacts were based on the Guidelines for Landscape and Visual Impact Assessment (Landscape Institute 1995).

The thresholds of change for the intensity of an impact are defined as follows:

Negligible: An action that could result in a change in the viewshed, but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor: An action that could result in a change in the viewshed. The change would be small and localized and of little consequence.

Moderate: An action that would result in a change in the viewshed. The change would be measurable and of consequence, but would be localized.

Major: An action that would have a noticeable change in the local viewshed, as well as sensitive vista and viewpoints. The change would be measurable and result in a severely adverse or major beneficial impact, and possible permanent consequence, upon the resource.

Alternative A – No Action

Direct/Indirect Impacts: Visual quality at the South Rim would not change if this alternative were selected.

Cumulative Impacts: There would be no cumulative impacts to visual quality as a result of implementing this alternative.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: Implementation of Alternative A would result in no impact to visual quality.

Alternative B

Direct/Indirect Impacts: The kitchen expansion, under this alternative, would be built on the north-side of the Multipurpose building. This alternative has the greatest potential to be viewed from Boulder and Center Streets, as well as various overlooks and viewpoints along the South Rim. The school campus is situated in a residential area of Grand Canyon Village, which has already been highly developed. The pinyon pines in front of the Multipurpose building act as a screen for the building. Removal of up to four of these trees to build the expansion would increase the visual impact of the school as viewed from Boulder Street and various overlooks. To minimize the impact to the surrounding landscape, architectural plans and drawings would undergo internal

NPS review in ensure that the addition would harmonize with the area in proportion, color, and texture. This would result in a moderate long-term impact to visual resources.

Cumulative Impacts: Grand Canyon Village is highly developed area on the South Rim of Grand Canyon. Within the village are residential housing, residential services and facilities (e.g. Grand Canyon School and Clinic), NPS administrative offices, utilities and infrastructure, and visitor services and facilities (e.g. lodging and restaurants). New structures are located in areas that would not diminish the visual integrity of the Grand Canyon vistas or compromise the visitor experience. Therefore, cumulative impacts would be minor.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: Implementation of Alternative B would result in a long-term moderate impact to visual quality.

Alternative C – Preferred Alternative

Direct/Indirect Impacts: This alternative would only be visible from the school campus, itself. Situated on the back-side of the Multipurpose building, it would not be visible from Boulder and Center Streets, or any of the vistas and viewpoints along the South Rim. The addition would be designed to blend with the existing architecture of the Multipurpose building and other buildings on the campus. As a result, it would have negligible impacts on visual resources.

Cumulative Impacts: Cumulative impacts to visual quality would be the same as those described under Alternative B.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: There would be negligible long-term impacts to visual quality from implementing Alternative C.

Alternative D

Direct/Indirect Impacts: The kitchen expansion, under this alternative, would be built on the north-side of the Multipurpose building. However, the limited size of this expansion and the fact that none of the pinyon pine trees would be removed would limit the ability to see this addition from Boulder and Center Streets, and various overlooks and viewpoints along the South Rim. However, the visual quality of the local environment (i.e. the school campus and historic junior high school building) would be impacted by the new addition. To minimize the impact to the surrounding landscape, architectural plans and drawings would undergo internal NPS review in ensure that the addition would harmonize with the area in proportion, color, and texture. This would result in a minor long-term impact to visual resources.

Cumulative Impacts: Cumulative impacts to visual quality would be the same as those described under Alternative B.

Impairment: There would be no impairment of the Grand Canyon National Park's resources or values if this alternative were implemented. This is concluded because no major adverse impacts would occur. Specifically, no major adverse impacts would occur to necessary resources needed to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or resources that are key to the natural or cultural integrity of the park, or resources identified as a goal in the park's GMP or other relevant NPS planning documents.

Conclusion: There would be minor long-term impacts to visual quality from implementing Alternative D.

Introduction

This chapter identifies the persons responsible for preparing this document, lists the individuals that were consulted or coordinated with for information regarding the document content, and provides a bibliographic citation for all referenced material. During the preparation of this EA, input was also received from federal, tribal, and state agencies and private individuals. These entities are listed at the end of this chapter.

Preparers

AZtec Research & Consulting

Sonny Kuhr, Project Manager/ NEPA Specialist

Consultation/Coordination

The following agencies, organizations and tribes were contacted for information or assisted in identifying important issues or analyzing impacts.

Agencies

National Park Service, Intermountain Support Office

Jill Cowley, Cultural Landscape Architect, Santa Fe

Sayre Hutchinson, NCARB, AIA Intermountain Support Office Architect

National Park Service, Grand Canyon National Park

Sara White, Compliance Officer

Jill Beshears, Compliance Officer

Jan Balsom, Cultural Resources Manager

Amy Horn, Archaeologist

Carl Bowman, Air Quality Manager

R.V. Ward, Biologist

Elaine Leslie, Biologist

Lori Makarick, Restoration Biologist

U.S. Fish and Wildlife Service

Bill Austin

Tribes

Havasupai Tribe
Hopi Tribe
Hualapai Tribe
Kaibab Band of Paiute Indians
Navajo Nation
Paiute Indian Tribe of Utah
Pueblo of Zuni
San Juan Southern Paiute Tribe
White Mountain Apache

References

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- Hendricks, D. M. 1985. Arizona Soils. University of Arizona Press. Tucson, Arizona.
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National Park Service. 1995c. National Register Bulletin #15. How to Apply the National Register Criteria for Evaluation. Available on the Internet at www.cr.nps.gov/nr/publications/bulletins/nr15_toc.htm

National Park Service. 1995d. Secretary of the Interior's Standards for the Treatment of Historic Properties. Available on the internet at www.cr.nps.gov/hps/tps/secstan1.html

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School Facilities Board. 2000. School Facilities Board Statewide Assessment. Project Number 030204001-1004-001. Phoenix, Arizona.

U.S. Fish and Wildlife Service. 2002. List of Endangered, Threatened, Proposed, and Candidate Wildlife and Plants in Coconino County. Available on the Internet at <https://fw2azes.r2.fws.gov/specmgt.nsf>

Federal Acts, Orders, Policies and Directives

Director's Order – 2	Park Planning
Director's Order – 12	Conservation Planning, Environmental Impact Analysis, and Decision-making
Director's Order – 28	Cultural Resource Management Guidelines
Director's Order – 47	Sound Preservation and Noise Management
NPS Management Policies 2001	
NPS – 77	Natural Resources Management Guidelines
40 CFR § 1500 <i>et seq.</i>	National Environmental Policy Act
36 CFR § 800	Protection of Historic Properties
Department Manual (U.S. Department of Interior) § 516	
Organic Act of 1916	
Antiquities Act of 1906	
42 USC 7401 <i>et seq.</i>	Clean Air Act § 118
Federal Water Pollution Control Act of 1972	
Executive Order 12898	Environmental Justice Guidance
Executive Order 11988	Floodplain Management
Executive Order 11990	Protection of Wetlands

Scoping Responses

Comments were received in response to the public scoping letter from the following agencies, as well as three private individuals. Table 7 summarizes the issues and concerns raised during public scoping.

State Agency

Arizona Game and Fish Department

Tribal Agency

Hopi Tribe

Navajo Tribe

Zuni Tribe

Private Individuals (3)

Names Intentionally Withheld

Table 7. Comments Raised During Public Scoping

General Topic	Issues Raised
Project Opinion	<p>No concerns or comments regarding the project</p> <p>Inclined to support Option 2 (Alternative B in EA) as it is more centrally located, and should provide sufficient area to meet both state and county requirements.</p>
Biological Resources	<p>Two special status species are documented as occurring within one mile of the project area</p>
Visual Quality	<p>If the 1,000-sq.-ft. addition were justifiable, would putting the addition on the south side of the building be the most visibly unobtrusive option?</p>
Alternative Considerations	<p>Is 1,000 sq. feet of expanded area truly necessary to accommodate the current and future needs of the school? If so, doesn't this eliminate the third option, which is to provide only 400 sq. feet on the north side of the existing multi-purpose building?</p> <p>Instead of building a kitchen to accommodate the students, the number of students allowed to attend Grand Canyon school should be lowered. This includes analysis of lowering the employee base at Grand Canyon</p>

APPENDIX A
Cultural Resources Specialists Review

I have reviewed this preferred alternative for conformity with requirement for the § 106 process, with the 1995 Servicewide Programmatic Agreement (if applicable), and applicable parts of the Secretary of the Interior's Stands and Guidelines for Archeology and Historic Preservation, MPS Management Policies, and Director's Order-28. I have stated any additional stipulation that should apply, and I concur in the recommended assessment of effect above.

Signed: James R. Bell 11/13/02
Archaeologist Date

Comments: No archaeological resources

Signed: _____
Cultural Landscape Architect Date

Comments: _____

Signed: N/A B _____
Curator Date

Comments: _____

Signed: N/A B _____
Ethnographer Date

Comments: _____

Signed: N/A B _____
Historian Date

Comments: _____

Signed: James R. Bell Acting for 11/13/02
~~Historical Architect~~ Science Center Director Date

Comments: _____

Approved: James R. Bell 11-22-02
Park Compliance Coordinator Date

Approved: Joseph J. Acchi _____
Superintendent Date

I have reviewed this preferred alternative for conformity with requirement for the § 106 process, with the 1995 Servicewide Programmatic Agreement (if applicable), and applicable parts of the Secretary of the Interior's Stands and Guidelines for Archeology and Historic Preservation, MPS Management Policies, and Director's Order-28. I have stated any additional stipulation that should apply, and I concur in the recommended assessment of effect above.

Signed: _____
Archaeologist Date

Comments: _____

Signed: *Jill Lowley* *Nov 20, 2002*
Cultural Landscape Architect Date

Comments: _____

Signed: _____
Curator Date

Comments: _____

Signed: _____
Ethnographer Date

Comments: _____

Signed: _____
Historian Date

Comments: _____

Signed: _____
Historical Architect Date

Comments: _____

Approved: _____
Park Compliance Coordinator Date

Approved: *James D. Acuti* *11-22-02*
Superintendent Date

I have reviewed this preferred alternative for conformity with requirement for the § 106 process, with the 1995 Servicewide Programmatic Agreement (if applicable), and applicable parts of the Secretary of the Interior's Stands and Guidelines for Archeology and Historic Preservation, MPS Management Policies, and Director's Order-28. I have stated any additional stipulation that should apply, and I concur in the recommended assessment of effect above.

Signed: _____ Date _____
Archaeologist

Comments: _____

Signed: _____ Date _____
Cultural Landscape Architect

Comments: _____

Signed: _____ Date _____
Curator

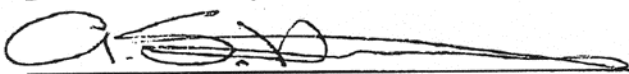
Comments: _____

Signed: _____ Date _____
Ethnographer

Comments: _____

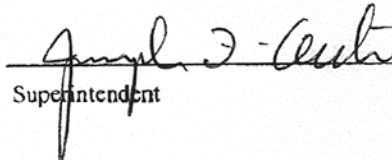
Signed: _____ Date _____
Historian

Comments: _____

Signed: GRAND CANYON SCHOOL KITCHEN EXPANSION
 _____ Date 11-21-02

Comments: HISTORICAL ARCHITECT
THERE STILL NEEDS TO BE DESIGN CONSULTATION ON THE ADDITION. THIS
EA / IDO PACKAGE IS NOT COMPLETE WITHOUT IT. IM SIGNING THIS EA
WITH THE UNDERSTANDING THAT A SEPARATE CONSULTATION WILL
TAKE PLACE ON THE KITCHEN ADDITION.

Approved: _____ Date _____
Park Compliance Coordinator

Approved:  _____ Date 11-22-02
Superintendent